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THE CHARGE FOR RAILWAY MAIL CARRIAGE.

In no year since 1884 have the receipts of the Post-Office Department equaled the expenditures. In recent years the annual deficiencies have become so great as to engage the serious attention of Congress and the public. It is generally held that as the Post-Office Department is nothing more than a business institution it should be self-sustaining. The plans brought forth designed to wipe out the annual deficits fall under two heads. Most of those who have carefully investigated the cause of the recurring deficits, notably the postmasters-general and Mr. Loud, have favored the curtailment of the unusual privileges enjoyed by second-class mail matter. Another, and perhaps more numerous class of men, would put an end to the difficulties of the department by a radical reduction of the compensation given the railroads for carrying the mail.

The abuses of the cent-a-pound mailing privilege have been repeatedly set forth by Mr. Loud and the postmasters-general, and therefore need not be given again here. Those who would lop off a third or a half of the pay given the railroads contend that the railroads are receiving eight or eight and one half cents

per pound for transporting the mail.[1] This, on its face, is regarded as excessive. Leaving the question as to what may be considered fair compensation for later discussion, let us attempt to discover if the railroads do actually receive eight or more cents per pound for hauling each pound of mail passing through the Post-Office Department.

This statement of the rate of compensation has been widely accepted because it has been quoted as coming from the postmasters-general and other high officials of the government. So far as can be discovered, this statement of the rate of pay appears to have no other warrant than certain announcements of the postmasters-general and certain statements in a report of the House Committee on the Post Office and Post Roads, and a statement of Mr. Davis, appearing in a report of the Senate Committee on Appropriations, that could be misunderstood. In 1894 Postmaster-General Bissell said:

> The total weight of all the mail matter dispatched in the mails of the United States during the year ending June 30, 1894, I *estimate* to be about 451,000,000 pounds . . . . The cost of *carrying* all this matter was $36,207,572, which gives an average of a small fraction over 8 cents a pound.[2]

In 1895 Postmaster-General Wilson, in calling attention to the great loss falling upon the department because of the cent-a-pound rate of postage on second-class matter, in a more guarded statement said: "the average cost to the department of *transporting* and *handling* this matter is estimated at 8 cents per pound."[3] In 1896, when again discussing second-class matter, Mr. Wilson stated that "the mere cost of *transportation* of this matter is estimated at 8 cents a pound."[4] And in the same year Mr. Loud, in reporting on the abuses of the cent-a-pound rate of postage stated, in behalf of the Committee on the Post Office and Post Roads, that:

[1] Sometimes they state the average number of miles each pound is carried; but generally nothing is said about the length of the haul. This matter, which is of prime importance, is often neglected, as though it were of absolutely no moment.

[2] *Report of the Postmaster-General*, 1894, p. 33.

[3] *Ibid.*, 1895, p. 31.

[4] *Ibid.*, 1896, p. 7.

The cost of *transporting* and *handling* all mail matter averages 8½ cents per pound. Fourth-class matter . . . . pays postage at the rate of 16 cents per pound, which is about double the cost of *transmission*. Third-class matter . . . . pays postage at the rate of 8 cents per pound—about the cost of transmission.[1]

While discussing the growth of second-class mail matter in 1897, Postmaster-General Gary said: "the cost to the government of *transmitting* the 365 million pounds of second-class mail matter *carried* during the past fiscal year [1897] is *estimated* at 29 million dollars," or about 8 cents a pound; "the postal revenue received from it is estimated at three millions dollars, leaving a loss on *transportation* alone of 26 million dollars."[2] In the spring of 1898 Mr. Madison Davis (of the office of) the third assistant postmaster-general, in a reply to a request from the general superintendent of the railway mail service, wrote:

I send you the following estimate of the average cost per pound of *transporting* matter in the mails for the last fiscal year. The total weight of mail matter of all kinds passing through the mails during the year is *estimated*, upon the basis of an accurate calculation made in 1890, to have been *about* 527,516,000 pounds.[3] Dividing this total expenditure [$42,186,975.78] by the number of pounds of matter, we see that the average cost per pound is about eight cents.[4]

Let us now examine these statements to see if they warrant the assertion that the railroads receive on the average 8 cents per pound for carrying the mail. Let us consider them seriatim. Postmaster-General Bissell, in 1894, stated that he *estimated* the total weight of all the mail matter dispatched in the mails of the United States, during the year ending June 30, 1894, to be *about* 451 million pounds. The cost of carrying all this matter was $36,207,572, which gives an average of a small fraction over 8 cents a pound. Mr. Bissell does not say that the cost of transporting this matter on the *railroads* was $36,207,572, or 8 cents per pound. He simply states, without specifying the manner,

[1] *House Report No. 260*, pp. 1, 2, LIV Congress, first session.

[2] *Ibid.*, 1897, p. 7.

[3] This estimate does not include the government, that is, "franked" matter.

[4] *Senate Report No. 991*, p. 115, LV Congress, second session.

that the cost of *carrying* this matter was as just given. By referring to his financial statement for the year, it will be found that but $28,735,065[1] were expended upon railway transportation and not $36,207,572. This would make the average pay 6.3 instead of 8 cents per pound, if the weight was as stated and the railroads carried it all.

Postmaster-General Wilson, in 1895, said in discussing second-class mail matter that "the average cost to the department of *transporting* and handling this matter is estimated at 8 cents per pound." Mr. Wilson did not state that the cost of *railway* transportation was 8 cents per pound. He did not even say that the cost of *transportation* was 8 cents per pound, but that the average cost of transporting and handling is *estimated* at 8 cents per pound. Mr. Wilson did not make the bald statement that it costs 8 cents per pound to transport and handle this matter, because he knew that the data in his possession would not warrant so positive an announcement. In his next report in directing the attention of the country to the enormous loss arising from the transmission of second-class matter at the low postage rate of 1 cent a pound, Mr. Wilson declared that "the mere cost of *transportation* of this matter is *estimated* at 8 cents a pound." The question at once arises as to what he means by "transportation." He certainly must have had in mind more than railroad transportation for the aggregate of the several forms of payment to the railroads was $30,951,528.93.[2] The total weight of the mail—exclusive of the government or franked matter, which must have been in the neighborhood of 50 million pounds—was 512,977,326 pounds according to the figures of the Post-Office Department.[3] If it be assumed that this was the amount transported by the railways, the average cost per pound for railway transportation was but 6 cents.

[1] *Report of the Postmaster-General*, 1894, p. 27. This sum includes all three forms of payment; (1) that made on the basis of weight, (2) for railway post-office cars, and (3) "special facility" pay.

[2] *Report of the Postmaster-General*, 1896, p. 39.

[3] *Ibid*, pp. 7, 8.

Let us now pass on to the report presented by Mr. Loud in behalf of the House Committee on the Post Office and Post Roads. Speaking for this committee, Mr. Loud said, "the cost of *transporting* and *handling* all mail matter averages 8½ cents per pound," and that the postage paid on fourth-class matter is 16 cents per pound, which is about double the cost of *transmission*, etc. While this statement may not be so explicit as could be desired, yet any one in search of the facts should not have fallen into the error of supposing that 8½ cents simply covered the cost of railway transportation. Postmaster-General Gary said in 1897 that the cost to the government of *transmitting* the 365 million pounds of second-class mail matter *carried* during the past fiscal year is *estimated* at 29 million dollars, or about 8 cents a pound; "the postal revenue received from it is estimated at 3 million dollars, leaving a loss, on transportation alone, of 26 million dollars.' This statement is almost too vague to criticise. If the second statement explains the first, the most that can be said is that the cost to the government of transporting 365 million pounds of mail matter, by all means of transportation that may have been employed, was 29 million dollars. It did not cost the government 29 million dollars to transport 365 million pounds of mail matter by rail. This could easily have been discovered by anyone ready to go to a little trouble to ascertain the truth. The total cost of railway transportation on the basis of weight alone was approximately 29 million dollars — accurately $28,965,763 — and the total of the three forms of payment to the railroads was $32,490,056.[1] The weight carried on the railroads, however, greatly exceeded 365 million pounds which was but the weight of the second-class matter, according to the statistics compiled by the department itself.[2] "The total weight of the mail carried was 607 million pounds," said Mr. Loud in discussing this point in the House of Representatives.[3] If it be assumed that all this mail was carried by the railroads during some portion of its jour-

[1] *Report of the Postmaster-General*, 1897, p. 16.

[2] *Ibid*, p. 7.

[3] *Congressional Record*, LV Congress, second session, p. 3328.

ney, the cost for railroad transportation, the three forms of payment being included, was but 5.3 cents per pound.

One statement yet remains to be examined; that made by Mr. Madison Davis to the general superintendent of the railway mail service. This is easy to explain because the facts are given upon which it is based. Mr. Davis said the average cost per pound of *transporting* matter in the mails for the fiscal year 1897 was about 8 cents per pound. Mr. Davis has not left us in the dark as to what he means by *transportation*. He gives the items of expenditure which he includes under the general head of mail transportation. They are as follows:[1]

Railroad transportation	$28,965,763.52
Special facilities on railroads	162,978.33
Star transportation	5,322,484,86
Steamboat transportation	401,262.95
Electric and cable car transportation	139,734.81
Mail-messenger service	951,624.29
Wagon service	705,260.25
Mail bags and catchers	343,324.59
Mail locks and keys	41,964.13
Repair shop for mail bags	7,749.24
Railway postal-car service	3,361,313.76
Transportation of foreign mails	1,703,515.05
Additional compensation to the oceanic steamship company	80,000.00
Total	$42,186,975.78

Of these thirteen items of expenditure only three are for railroad transportation; several of them have nothing to do with transportation of any kind. Of the total expenditure of $42,186,975.78 only $32,490,056 can be assigned to railroad transportation.

We have now examined the original statements on the basis of which it has been asserted that the *railroads* receive on the average eight or eight and one half cents per pound for transporting the mail, and have found that the statements quoted do not warrant the assertions.

[1] *Senate Report No. 991*, p. 115, LV Congress, second session.

DO THE RAILROADS RECEIVE EIGHT CENTS PER POUND FOR CARRYING MAIL AN AVERAGE DISTANCE OF 328 MILES?

In making certain comparisons it is often asserted that the railroads receive on the average eight cents per pound for carrying mail an average distance of 328 miles. This differs from the statement just examined in that it attempts to state the average distance each pound of mail is carried. It represents an advance on the previous statement for it looks upon the haul as a matter of too great importance to be wholly disregarded. In the consideration of this contention our investigation will take a wider range than in the examination just concluded. Up to this point I have merely shown that certain official statements often cited have been grossly misused. Now I shall go a step further. Certain data furnished by the Post-Office Department will be valuated and the methods employed in making certain estimates and averages will be analyzed. It will be shown what statistics furnished by the department rest upon actual observation, and what do not. By this is meant that if the statistics have to do with weight, an attempt will be made to show to what extent they are based upon weighings; if they have to do with the distance mail is carried to what extent they are based upon actual tests of the distance mail matter is sent. In the course of this investigation it may appear that often statistics furnished by the Post-Office Department, and announced simply as estimates, are presented by other parties to the public as absolute data.

Let us now examine the statement that the railways receive on the average eight cents per pound for carrying the mail an average distance of 328 miles. What facts does it presuppose? Obviously the following data must be at hand: (1) the amount of matter carried by the railroads; (2) the average distance it is carried; and (3) the amount paid the railroads for rendering the service. It is respectfully submitted that the Post-Office Department does not possess accurate data on the first two heads and that it does not pretend to, and if the facts are not in the possession of the department no one else can have them.

I. THE WEIGHT OF THE MAIL CARRIED.

Attention is first invited to the amount of matter in the aggregate actually carried by the railroads. That is, how many pounds of mail, each piece counting but once, are carried by the railroads in the course of a year? The post-office officials cannot give this information. They do not possess it. They do not even know with any degree of accuracy the amount of mail matter that passes through the mails in a year. But, in spite of this fact, many persons who have discussed the compensation received by the railroads have stated with assurance the exact amount of matter handled by the department by years since 1880.

In 1886 Postmaster-General Vilas said, in comparing the growth of our mail matter with that of other countries, "No statistical account is maintained in the United States of the quantity in weight or number of pieces, of our domestic mails;"[1] and then ventured nothing more than the general statement, "but, from the number of postal cards, stamps, and pieces of stamped paper sold to the public, it may be unquestionably affirmed that the mail matter handled by our postal service greatly outweighs and outnumbers that of any other postal system." In 1887 we find this statement in the report of the postmaster-general: "As I have before observed, it is difficult to state *with any degree of exactness* the annual tonnage of the United States mail carried on all the railroads in the United States."[2] Here it was again expressly acknowledged that no exact information was at hand as to the weight of the mail carried by the railroads. When Mr. Wanamaker became postmaster-general he was very much hampered by the lack of trustworthy information of the volume of the business done by the department. He made the first attempt to ascertain the count and weight of the mail. An account of what he did will be inserted in his own words:

> For important statistical purposes the department has been at a loss for reliable data as to the number of pieces and *weight* of matter passing through the mails and the amount of revenue derived from each of the several

[1] *Report of the Postmaster-General*, 1886, p. 4.

[2] *Ibid.* 1887, p. 399.

classes of matter. For reasons involving the quickest possible dispatch of the mails it is impracticable to take a continuous account of the matter mailed. But a count of mail matter was ordered at all post offices in the country for the seven consecutive days beginning at six o'clock A.M. on the 5th of May, and ending at six o'clock A.M. on the 12th of May. . . . . The instructions enjoined the utmost care upon the postmasters in making accurate reports. The week selected was believed to be a fairly average period upon which to estimate the total business for the year.[1]

Upon the basis of this weighing the weight of the whole year was estimated. Since 1890 no actual test has been made of the weight of the matter passing through the mails. The statements made are merely estimates based upon Mr. Wanamaker's actual test. As late as December 1897, when called upon for a statement by the general superintendent of the railway mail service, Mr. Madison Davis, who has charge of these statistics, replied: "The total weight of mail matter of all kinds passing through the mails during the year [1897] is *estimated*, upon the basis of an accurate calculation made *in 1890*, to have been about 527,516,000 pounds."[2] It has been pointed out by Mr. Loud, chairman of the Committee on Post Office and Post Roads of the house, that this estimate *does not* include the government matter. He estimates all the matter at 607 million pounds.[3]

From this statement it appears that the test made by Mr. Wanamaker in 1890 for a single week is still the basis of the estimates made of the amount of mail passing through the department. At this point two questions naturally arise: (1) Was the week selected an average week? (2) was the test well conceived and thoroughly executed?

Let us consider the first point raised — was the week selected an average week? This is a difficult question to answer. It can, however, be stated with assurance that we have no positive information that it was. To obtain an average the factors forming the average must be at hand, but they were not in this case. The field is so large and the volume of the business is so great

[1] *Report of the Postmaster-General*, 1890, p. 50.

[2] *Senate Report No. 991*, LV Congress, second session, p. 115.

[3] *Congressional Record*, LV Congress, second session, p. 3328.

that it seems perfectly safe to say that it is impossible for any man or set of men to fix upon a week and to say this is an average week. As the test began at six o'clock on the 5th of May an average number of the magazines were not carried; for the magazines of large circulation are mailed so as to arrive at their destination before the first of the month. I have been informed by railway mail clerks that the period during which the mails are swelled by the magazines is very clearly marked. They begin moving about the twentieth of each month and in a few days reach their maximum movement and quite disappear by the last of the month — a few appearing as late as the third of the new month. A test, to be at all representative, must extend over at least a month. This has been fully recognized by Congress. In the act of 1873 fixing the rates of compensation to the railroads for carrying the mail it is stated that the weight shall be determined by *actually* weighing the mail for not less than thirty successive working days. Even with this period of actual weighing the railroads sometimes feel dissatisfied.

Was the test well planned and thoroughly executed? No account was taken of the mail received in this country from foreign lands. The volume of this mail is now very great, and a large portion of it is hauled across the continent.[1] The test was not satisfactory for another reason. The postmasters were informed that the trial should not be allowed to delay the transmission of the mail. As a result, during the busiest hours, the weight of the mail was not obtained by actual weighings. The weights for these hours, which it was especially desirable to have as accurate as might be, were merely estimates.

In the light of the facts that have been presented, of what value are tables giving the amount of mail passing through the mails since 1880? Obviously these tables are not to be regarded as absolute data. At best, they can be considered nothing more than rough estimates. And apparently they are regarded as such by the Post-Office Department. If the weight

[1] *Report of the Postmaster-General*, 1890, pp. 51 and 52. He does include the amount of matter sent to foreign countries from the United States.

of the mails is not known it cannot be stated that the railroads receive eight cents per pound for carrying the mail.

II. AVERAGE DISTANCE MAIL IS CARRIED.

On page 151 it was stated that it was manifestly necessary to have the following data to tell how much the railroads received per pound for carrying the mail an average distance of 328 miles: (1) The weight of the matter, (2) the average distance, and (3) the pay received. We have already examined the data falling under the first head, and may now direct our attention to the statistics we have under the second head. So far as I can discover, but one serious attempt has been made to ascertain the average distance each pound of mail is carried, and that was limited in scope and of short duration. In 1876 Postmaster-General Jewell, in advocating graduated rates of postage, on the basis of distance, to apply to certain kinds of mail matter, said:

> In order to arrive at any distinct conclusion regarding the rates that should prevail for the different distances, it is necessary to have the different proportions of mail destined for different distances. That their weight might be had, a report was asked for from a number of the largest offices in the country, giving the weight of the different classes of mail going to the different states during three days, and the distances to each and all states were averaged."[1]

This computation showed that the average distance the mail was then carried was 813.5 miles.[2] No other test equally

[1] XLIV Congress, first session, *Senate Miscellaneous Document No. 51*, p. 2.

[2] The tabulated results were as follows:

Weight in pounds		Distance miles		
41,087	going	0 to	300	Average distance the mails were carried, 813½ miles
13,494	"	300 "	600	
15,881	"	600 "	900	
13,586	"	900 "	1,200	
5,528	"	1,200 "	1,500	
1,269	"	1,500 "	1,800	
2,099	"	1,800 "	2,100	
1,378	"	2,100 "	2,400	
576	"	2,400 "	2,700	
703	"	2,700 "	3,000	
5,817	"	over "	3,000	
101,418				

—XLIV Congress, first session, *Senate Miscellaneous Document No. 51*, p. 3.

thorough has since been made. In 1889 Postmaster-General Wanamaker made a test in forty offices,[1] and found that the average distance each *piece* of mail was carried was 442 miles. A glance, however, at the following table,[2] which presents a summary of the results of the forty offices, will show that the average distance each *pound* was hauled was much greater than 442 miles. This follows from the fact that his is a weighted average

RECAPITULATION OF THE FORTY OFFICES.

	Number of pieces	Number of pounds	Average number of miles each piece was carried
1. Letters	3,382,571	69,849	386
2. Postal-cards	528,076	2,772 5/10	339
3. Wrapped parcels under seal at letter rate	8,907	2,776 1/4	430
4. Third-class matter	1,962,925	242,447	558
5. Fourth-class matter	101,326	42,819	599
	5,983,905	360,663 3/4	442

on the basis of the pieces handled, while what is wanted is a weighted average on the basis of the pounds handled. The table shows that of the total 360,663 pounds handled, the average distance that each piece of the 242,447 pounds of third-class matter was carried, was 558 miles, and that the average distance that each piece of the 42,891 pounds of fourth-class matter was carried was 599 miles. The table also shows that the average distance the 3,382,571 letters were carried was but 386 miles, and the average distance the 528,076 postal-cards were carried was only 339 miles. In brief, the matter of numerous pieces was short-distance mail, and therefore a weighted average based upon pounds would show a larger average distance than one based upon pieces. This test was faulty for still other reasons—it does not include second-class and franked

[1] His experiment was tried in ten of the principal offices of each of the four classes.

[2] *Report of the Postmaster-General*, 1898, p. 90.

matter.[1] If the table were still of any value in showing the average distance each pound of mail is carried, these omissions, it must be admitted, completely destroy it, for second-class matter is long-distance mail, and almost equals in weight all the other classes combined.[2] Now, if the weight of the second-class matter was about equal to that of all other matter combined, and if almost the whole of it was long-distance matter, and this is generally conceded, had this class been included in the test it would have greatly raised the average distance each pound of mail was carried.

As has been stated, franked matter was also not included in the test. This, even to a greater extent than second-class mail, is upon the whole long distance business. Here the general rule that people communicate most with people near at hand does not hold good, and for the obvious reason that the friends of each congressman are in his own district.

One attempt to ascertain the average distance each pound of mail is carried still remains for examination. This differs radically from the others. It does not rest upon actual observation, but on a series of computations based upon estimates. In the language of its author it is as follows:

> An *estimate* by the third assistant postmaster-general gives an average weight per day of 1,447,671 pounds of mail, which added to an *estimated* weight of 153,729 pounds of equipment, amounts to 1,601,400 pounds.
>
> The railway adjustment division gives, as carried by railroad lines per day, 7,846,851 pounds. Therefore 1,601,400 pounds is reweighed as many times as it is contained in 7,846,851 pounds — 4.9 — which must necessarily be the average number of routes a pound of mail passes over before it reaches destination.
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> * * * * * * * * *
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> There are 2,587 railroad routes in the United States, and the total number

[1] *Ibid.*, pp. 32 to 90.

[2] This statement is based on the test made for one week in 1890, of the different classes of matter mailed in the United States, and to which I have already referred. As I hold that this test did not show the average amount of second-class matter handled I believe it may be asserted that the weight of the second-class matter fully equals all the other forms of postal matter combined, including the free and franked matter.

of miles of these routes is 173,256. Therefore the average length of a route is 173,256.14 miles divided by 2,587 routes or 66.97 miles.

As above stated, 1 pound of mail is carried over 4.9 routes, and each route averages 66.97 miles, which makes 328 miles as the average haul of a pound of mail.[1]

Let us examine first the data and then the method by which this result was obtained. Attention has already been directed to the fact that the Post-Office Department has no data that can be regarded as satisfactory of the total amount of mail matter handled each day; and therefore it was very properly stated in the demonstration, that it was estimated that the average weight handled per day was 1,601,400 pounds. It was also said in the demonstration that "the railway adjustment division gives, as carried by the railroad lines per day, 7,846,851 pounds." This sum does not represent the total amount of mail carried by the railroads. The weight actually carried by all the railroads is considerably in excess of the amounts announced by the department. This follows, because the departmental statements of weight carried are always those ascertained at the previous weighings, which may have been made more than four years before, and therefore generally fall far short of the weight actually carried. Now, as the premises of the demonstration cannot be accepted, the deduction that on the average each pound of mail is carried on 4.9 routes cannot be accepted. The second average is above criticism; the department has actual information of the number of post routes and their mileage, and can therefore obtain the average length of the routes.

The data used in ascertaining the average 328 miles have now been examined and the method of finding the average distance each pound of mail is carried may now be considered. The method cannot be accepted. And for the very obvious reason that the relative importance of the routes, from the standpoint of the weight carried, is absolutely neglected. It is generally known that upon the whole the short routes are the light routes, and the long routes are the heavy routes, and that therefore the

[1] *Senate Reports No. 991*, p. 146. LV Congress, second session.

value of the long routes is increased by reason of the heavy mails that pass over them, while that of the short routes is diminished because of the light mails that pass over them.

All the data necessary for the employment of the proper method of determining the average distance each pound of mail is carried were at hand.[1] The number of pounds of mail matter (each piece counting but once) handled in the mails each day, and the average number of pounds of mail carried over the whole length of each railroad postal route in the United States each day, and the length of these routes, were all the facts needed. With the length of the routes and the average number of pounds carried over the whole length of each route each day, the total number of miles one pound was carried could be obtained, and by dividing this by the number of pounds turned over to the railroads, the average distance each pound was carried could have been ascertained.

To make absolutely clear what I have stated I shall resort to a simple illustration showing the method which was employed to obtain the average distance each pound of mail is carried and

Routes	Average weight of mail carried over entire route per day	Length of route	Number of miles one pound is carried
	Pounds	Miles	
A	10	10	100
B	100	50	5,000
C	200	100	20,000
D	300	200	60,000
E	1000	500	500,000
Totals	1610	~~860~~	585,100

then the method I hold should have been adopted. Let us suppose that there are but five postal routes in the United States, which are represented by the letters of the first column of the subjoined table, that they carry the weights indicated in the second column their full length each day, and that they have

[1] Some of these data have been criticised, but as they were all used in determining the average distance mail is carried by the faulty method, there appears to be no reason why they could not have been employed in determining the average distance by the proper method.

the lengths indicated in the third column. Let us further suppose that 805 pounds of new matter are thrown upon the railroads each day. At this point the author of the demonstration cited would say, "as the weights carried on all the routes amount to 1610 pounds, and the new matter was but 805 pounds, each pound must have been carried over two routes." He would go on to state that "there are five railroad routes in the United States, and that the total number of miles of these routes is 860. Therefore the average length of a route is 860 miles divided by five routes or 172 miles." And he would continue: "As above stated one pound of mail is carried over two routes, and each route averages 172 miles, which makes 344 miles as the average haul of a pound of mail."

My own method differs radically from this. By multiplying the number of pounds carried over each route by the length of the route I obtain the number of miles one pound is carried. These results are given in column four. By adding these products I find that the work done on the five routes was equivalent to carrying one pound 585,100 miles. Now, as by hypothesis 805 pounds of mail were carried on these five routes, we have simply to divide 585,100 by 805 to discover the average distance each pound was carried. This operation gives 726.7 miles, or more than twice the distance obtained by the former method. The importance of considering the weight of the mails carried as well as the length of the routes is perhaps sufficiently emphasized by this illustration.

The discussion of the contention that the railroads receive on an average eight cents per pound for carrying the mail an average distance of 328 miles is now finished. And it is believed the following propositions have been established: (1) that the reports of the government officials do not warrant the statement of the rate of pay commonly announced; (2) that the total weight of mail, each piece counting but once, handled by the Post Office Department in a year is not known; and (3) that the average distance each pound of mail is carried is not known.

GEORGE G. TUNELL.

CHICAGO.

THE DEVELOPMENT OF CREDIT.

One of the most remarkable phenomena of modern financiering is the power of credit. Credit has taken the place of money to a large extent in the larger transactions of commerce. Money has remained the common denominator of all payments, but as an actual medium of exchange has been to a great extent reduced to the subordinate function of settling retail transactions. The greater commerce of the world is carried on by a refined system of barter, in which banking credits of one sort or another are the chief factors. The economic function of a banking credit is that of a store of value, like hoarded silver or gold. It constitutes command over commodities, affording the saved or postponed title to capital.

The two fundamental elements of credit are confidence and time. The word itself is derived from the Latin *credere*, to believe, and the term used on the European continent for the credit circulation of banks of issue is the fiduciary circulation, the former word being derived from the Latin *fiducia* (trust), related to *fides* (faith). While confidence plays an important part in all operations of credit, it is not the only element of importance which they involve. Indeed, the amount of credit given as the result of confidence alone is but a small part of the volume of credit transactions. Such transactions are usually accompanied by guarantees and securities which reduce the risk to a minimum. The other element which plays a dominating part in credit transactions is that of time. The importance of this element has been pointed out by the Austrian economists, and by none with greater precision than Professor Bohm-Bawërk, in his development of the theory of interest. He points out that the interest rate and the discount rate, which in this case operate in a somewhat similar manner, constitute the difference between the present value and the future value of capital or commodities. The amount of credit or money which is granted, for instance,

upon a commercial bill is the present value of the title to future capital, and the difference which is taken out in discount is the difference between present value and future value. The operation of this rule is thus illustrated by Professor Macleod:[1]

> So the money paid for the good will of a business, a copyright, patent, a professional practice, and so forth, is the Present Value of the Future Profits.
>
> So when a merchant or trader trades on "Credit" he brings into commerce the Present Value of a Future Profit. He buys the goods or the labor, and gives as their price the Right to demand a sum to be paid out of the expected future profits.
>
> So when the State contracts a loan for any public purpose it buys the Money, and gives as its price the Right to demand a series of payments out of the future income of the people.

From these elements arise the best definitions of what credit is. Professor Tucker says that it is "the transfer of something valuable to another, whether money, goods, or services, in the confidence that he will be both willing, and able, at a future day, to pay its equivalent."[2] The importance of the element of time is recognized by Professor Horn in this definition:[3]

> To give credit is to consent to the adjournment of the compensation due, — to accept, in place of immediate delivery, the deferred delivery of the equivalent to which the grantor of any utility whatever (goods, services, or enjoyments) has the right.

M. Block also makes the influence of time the dominant factor of credit. He says:[4]

> Credit is a sale, purchase, exchange, loan, or other transaction in which the delivery of a merchandise and the payment of the price, the rendering of a service and its remuneration, the advance of capital and its repayment, *are separated by an interval of time*. In other words, credit is an affair which begins in the present and ends in the future. . . . . Whatever may be the differences which mark the different species of credit, they have this in com-

[1] *The Theory of Credit*, vol. i. p. 88.

[2] *The Theory of Money and Banks Investigated*, p. 121.

[3] *La liberté des banques*, p. 68. The same view is held by Knies, who says that "every credit operation is an exchange or sale of services, one of which is to be performed in the present, and the counter-service of the other party in the future."—*Vide* ROSCHER, *Political Economy*, vol. i. p. 268.

[4] *Les progrès de la science économique*, vol. i. p. 481.

mon — that the act which terminates the transaction is separated by time from the act which begins it. This is its distinctive sign.

If it were possible for capitalistic production to be carried on without money or credit, the only methods of accumulating a surplus would be by hoarding one's own product, or exchanging it against the raw material or finished goods of another and hoarding these. The use of money first made it possible to hoard the fruits of surplus production in the precious metals. This is still done in India and other semi-civilized countries and was done on the continent of Europe down to a very recent time. But the supply of metallic money would be inadequate to the great volume of command over commodities which is constituted by banking credits. The existence of these credits, therefore, affords a means of postponing consumption, and of keeping the capital of the individual in a more fluid state than if it had to be kept in goods. Banking credits represent saved capital over and above the actual materials of current production. They represent purchasing power, but a purchasing power which is not being converted to the immediate purpose of exchange. So far as such credits represent only the working capital of active producers, they are likely to be applied at an early date either to purchases of additional raw materials for production or to purchases for consumption. Bohm-Bawĕrk truly says that the stock of capital in hand is essentially "nothing else than an aggregate of consumption goods in a transition state."[1] The mechanism of banking credits gives a mobility to the command over these goods which sometimes produces disastrous consequences, but is, nevertheless, one of the necessary conditions of modern industrial development.

The development of credit has been an almost necessary incident of the growth of capital. The great modern accumulations of capital could not be moved without credit; credit would have but a narrow field of operation without these great capitals. Credit was undoubtedly employed upon a limited scale, even before the use of metallic money, in the sense that goods were

[1] *The Positive Theory of Capital*, p. 93.

given without the immediate receipt of an equivalent; but credit in its modern sense, permitting the transfer of large quantities of commodities and the inauguration of great enterprises without the transfer of anything but written instruments, would be of little avail except in countries where there was an accumulation of surplus capital. Great accumulations of capital not required either for immediate consumption or for maintaining existing processes of production, and therefore awaiting investment in new enterprises, are an essentially modern phenomenon. There were some such accumulations in the ancient world, and they were accompanied by a considerable development of commercial credit. There were some accumulations also in England early in the last century, when interest rates fell so low that government three per cents were quoted at 107;[1] but these accumulations would have been inadequate to meet the demands for new capital now put forth in a single quarter.[2] How different are modern conditions from the old, even those of a very recent past, is indicated by Bagehot as follows:[3]

> We have entirely lost the idea that any undertaking likely to pay, and seen to be likely, can perish for want of money; yet no idea was more familiar to our ancestors, or is more common now in most countries. A citizen of London in Queen Elizabeth's time could not have imagined our state of mind; he would have thought that it was of no use inventing railways (if he could have understood what a railway meant), for you would not have been able to collect the capital with which to make them. At this moment, in colonies and all rude countries, there is no large sum of transferable money; there is no fund from which you can borrow, and out of which you can make immense works.

These credits have enormously increased within the last century and especially within the last quarter of a century. When Bagehot wrote, the combined banking credits of the four great money centers of the world—London, Paris, New York, and

[1] BASTABLE, *Public Finance*, p. 586.

[2] The applications for new capital for joint stock companies on the London market, during the first quarter of 1898, were £48,054,000.

[3] *Lombard Street: Works*, vol. v. p. 7. Upon this subject of modern accumulations of capital, see article by the present writer on "The Economic Basis of Imperialism," *North American Review*, September 1898, vol. clxvii. p. 326.

Berlin—were 200 million pounds (1000 million dollars). These were the banking credits of the national and commercial banks. The volume of commercial credits at the close of 1897 included deposits in the London banks alone of £331,211,000 (1600 million dollars), while the Bank of France and the big credit societies of Paris added more than 2500 million francs (500 million dollars), the German banks added 11,246.1 million marks (2800 million dollars),[1] and the New York City banks added 700 million dollars. Here was a fund of commercial credits alone amounting to 5600 million dollars or more than five times the amount in Bagehot's time. These commercial deposits, however, do not indicate the entire volume of saved capital which takes the form of banking credits. The deposits in the savings banks of the leading countries of the world are nearly 7000 million dollars and thus more than equal the commercial banking resources of the money centers for which the figures have been given.[2]

The forms of credit with which the science of money has most to deal are bank notes and other banking credits. These credits have been largely substituted for metallic money in exchanges. Money itself, by the convention of civilized societies, is a form of credit.[3] It is an intermediary between the goods one produces or the services one renders and the goods and services on the other side which one desires to obtain in exchange. Money is purchasing power and credit is purchasing power. Metallic money is the natural medium of exchange in a community where confidence is lacking or credit is undeveloped.

[1] *L'économiste européen*, August 12, 1898, vol. xiv. p. 203, and September 9, 1898, vol. xiv, p. 341.

[2] *Vide, Monthly Summary of United States Bureau of Statistics*, July 1898, p. 280. The deposits in 1895 in all civilized countries except Russia, as there given, are $6,604,546,473. The deposits in Russian savings banks on March 1, 1898, were 235 million dollars.—*Bulletin Russe de Statistique*, April-June 1898, p. 400. The figures of commercial credits include some banks and cities not included by Mr. Bagehot, but the very fact that these banks and cities have attained importance since his time adds to the force of the comparison.

[3] The person who takes money as such must always harbor the hope of being able to dispose of it again as money.—ROSCHER, *Political Economy*, vol. i. p. 351.

It possesses exchange value in itself. A banking credit, on the other hand, is only a paper certificate that the holder has delivered certain goods or rendered certain services to some other member of the community and is entitled to an equivalent. A banking credit, whether a bank note or a deposit receipt, may be described as a certificate of barter. It gets rid of the inconvenience of direct barter in the same manner that metallic money does,—by giving in exchange for goods or services an order for other goods or services which may be tendered for any article or service at the option of the holder of the order. The man who renders a service for which he receives a bank check in payment, which he deposits with the bank, has to his credit a written record that he is entitled to obtain from society an equivalent for his original service. He is enabled to postpone the use of this power as long as it suits his convenience. When he does use it, he transfers to another the certificate of the indebtedness of society to him. Banking credits represent, therefore, a system of barter by which the substitution of certificates of barter for direct exchange of goods, man to man, permits the completion of the two halves of an exchange at different dates and gives freedom of choice among the objects of exchange.

So simple does this method of exchange appear, by certificates of barter, that it is declared by M. Ernest Solvay, that if it had been adopted from the beginning "the system of actual money would have appeared barbarous by its illogical and inconvenient character."[1] The maker of a pair of shoes, for instance, instead of exchanging them directly for a bushel of wheat, would accept a banking credit which was really an order, signifying to society that he had delivered a pair of shoes and was entitled to the equivalent in some other merchandise. A banking credit might be recorded in his favor, without the existence of any monetary unit, by the simple declaration that he was entitled to the equivalent of a pair of shoes. Society, in such a case, would be able to conduct exchanges without money by means of credit,

[1] "Le comptabilisme social," *Annales de l'Institut des Sciences Sociales*, March 1897, vol. iii. p. 3.

but the difficulties would be the same in respect to the lack of a common denominator which were encountered when there was no money. The adoption of a common denominator is necessary to facilitate comparisons of one article with another. Even this step could be taken without the intervention of coin, if the denominator could be given a fixed value. If an abstract dollar could thus be created as the equivalent of a bushel of wheat, such dollars could be printed or could be transferred on the books of a bank without the employment of any metallic money.

The principle underlying this exchange of commodities against each other, by a refined form of barter, is important, because it tends to show the minor part played by the metals in exchanges. A community which should be able to conduct exchanges in this manner might be no less rich, and its transactions would be in some senses no less secure, than if its exchanges were conducted in coin. It is the exchange of one commodity for the other which constitutes the essence of the transaction. The intervention of the terms of money is necessary simply to provide a common denominator; the adoption of metallic money as a standard is necessary to give certainty to the common denominator. But in both capacities metallic money is required only in limited quantities, much as the official bushel measure is required as a gauge of many private certificates of measurement. Aside from the operation of this test, credit operates as an effective instrument of exchange. Its wide use destroys the value of reasoning based upon the theory of a fixed relation between the quantity of credit and metallic money and does much to justify the declarations of Lord Farrer:[1]

> "Credit" is not simply a means of using less gold. "Credit" or "debt" is a substitute for gold as a circulating medium, which has in some places almost displaced its principal, and which may displace it entirely, or almost entirely, as nations advance in commercial aptitude. Its functions are so great and so important that modern commerce would without it not only have been more difficult, but could not possibly have been carried on. If it is an economy, it is an economy only in the sense in which the railway or the steamship can be considered economies. It makes exchanges possible just as the

[1] *Studies in Currency*, 1898, p. 91.

railway and the steamship make the transportation of goods possible. It is as great, if not as visible, an instrument in erecting the gigantic fabric of modern trade as steam or electricity.

There are several forms of commercial credit, some involving a specific pledge of commodities and others resting upon the general solvency and wealth of the person to whom the credit is granted. The most common form of banking credits is the granting of discounts. In a typical case of discount the manufacturer of goods receives from his customer, the merchant, a note or bill for the value of the goods, due in three months or less. If there were no banks nor money-lenders the manufacturer could not obtain the proceeds of the bill nor make use of it until the three months had passed (unless he parted with the whole of it for goods). But the banker will accept the bill, if he regards the manufacturer and the merchant as solvent, and give the holder at once its present value in money, or in a banking credit which is the equivalent of money in the command over goods. With this money or credit the manufacturer is enabled at once to purchase new raw materials, to pay wages, and to continue without interruption the processes of production. When the bill becomes due, the merchant has obtained money or credits by the sale of the goods, and has the means for paying it. A banking credit is, therefore, usually the title to future payment given by a purchaser of goods, which has been converted by the bank into a title to the immediate command over any commodity.

The theory of banking operations adopted by some of the older writers was that bank notes and banking credits were directly representative of commodities. The conception was, in effect, that the man who sold a bill of goods, receiving therefor a bill of exchange, created the legitimate occasion for the issue of bank notes to the face value of the bill of exchange, minus the usual banking charges. The notes were supposed to represent the goods and remain in circulation until the extinguishment of the debt, when a corresponding amount of notes were brought to the bank to take up the bill of exchange. Professor

Macleod has rendered a service to economics in pointing out that there is no such close connection in fact between the goods and the banking credit, and that the obligations created are not direct liens upon the goods, but personal obligations. He shows that the same goods which were first sold for a bill of exchange may become the subject of a dozen bills as they pass from one hand to another, so that there is not even an indirect lien upon the goods of an exclusive character for the payment of the first bill. Professor Macleod was one of the first to demonstrate that banking credits are not based upon specific commodities which are pledged for their redemption, but are in law a general personal right of action. His statement of the legal relations between the bank and its customers is as follows:[1]

> Suppose that a person pays in a sum of money to his account at his banker's — what becomes of that money? It becomes the absolute property of the banker. The customer cedes the absolute property in money to the banker; but he does not make him a present of it. He gets something in exchange for it — and what is that something? In exchange for money the banker gives his customer a credit in his books, which is a right of action to demand back an equivalent sum of money whenever he pleases. But it is not a title to any specific sum of money in the banker's possession. It is a mere abstract right of action against the person of the banker to demand a sum of money from him. The transaction is a sale or an exchange: the banker buys the money from his customer by issuing to him in exchange for it a right of action, and the customer buys this right of action with gold.
>
> Furthermore, the banker agrees that his customer may transfer this right of action to any one else he pleases by means of a bank note or check.

This statement refers to a money deposit, but the same principle applies when a note is discounted and the amount granted by the bank is placed to the credit of the customer. Notwithstanding this demonstration, there is a general relationship between the volume of production the number of bills of exchange created, and the issue of bank notes and banking credits. If production is extensive, there is a greater demand for credit, more bills are created, and more bank notes are issued. When the activity of production diminishes, fewer bills are presented

[1] *Theory of Credit*, vol. i. p. 19.

for discount, the bank notes in the hands of the public come into the bank on deposit, and there is less demand for their reissue. The credit of the borrowers from the bank upon the bills of exchange, moreover, while it is a personal credit in form, and does not constitute a direct lien upon the particular bill of goods, does in fact depend in a large measure upon the volume of business done by the borrowers, the quantity of goods they produce, and the available assets in the form of goods and raw materials which are in their hands or are believed by the grantors of credit to be there. Professor Leroy-Beaulieu rightly declares that purely personal credit, not supported in any manner by goods, is rare, and is more often extended for purposes of consumption than for those of production. He says:[1]

> Credit should not be a simple anticipation upon future and uncertain wealth; it should have for its basis a thing real and actual—goods which are finished and which have not been sold; goods which having been sold have not yet been paid for; goods even which are in process of manufacture and of which all the elements have been gotten together; an enterprise which is not terminated, but which is already in a certain degree of advancement.

The uses of credit are so numerous and it has acquired such wide extension in modern commerce that some of the more enthusiastic students of the subject have taken the ground that the creation of credit is the creation of a new capital, adding greatly to the capital in land, labor, and their products which would be available for the purposes of production if credit was not employed. Professor Macleod has made this proposition the leading theme of his economic works. He has endeavored to convict earlier economists of having acknowledged that credit is purchasing power, that purchasing power is wealth, and that, therefore, credit is wealth, independently of the resources of a country in land, labor, and material things. He declares "that the only true definition of wealth is—everything whose value can be measured in money, or which can be bought and sold—*everything* which has *purchasing power*." As "personal credit

[1] *Traité d'économie politique*, vol. iii. p. 358. Professor Courcelle-Seneuil says that "credit can only be maintained so far as the capital of which it is the object is preserved, and it can scarcely be preserved unless it is well employed."—*Ibid.*, p. 256.

can be valued in money," and is purchasing power, it follows, in his opinion, that personal credit is wealth. The contention that personal credit is wealth turns largely upon the use of terms. There is no doubt of the value of the personal qualities —the training, intellectual acquirements, and character—which enable a man to obtain credit. They are wealth to him and wealth to the community. But the contention of Professor Macleod goes beyond this, and insists that the credit itself is wealth, independently of both material things and the qualities which command credit. After defining the character of abstract legal rights to money in the form of credits, he declares that "by the fundamental laws of natural philosophy these *abstract rights* are all *wealth*."[1] This is true, so far as it relates to the position of the individual. The possession by him of titles to wealth is wealth under the legal rules of all civilized nations. But the question is different when this wealth is considered in its relations to the aggregate wealth of the community. The creation of a mass of abstract rights does not add to the wealth of the community, unless they are rights to property in other communities. One is simply the representative and shadow of the other. The ability to obtain credit is personal wealth, but the aggregate abilities of individuals to obtain credit, or the credit which they have actually succeeded in obtaining, cannot be added to the ascertained visible wealth of the community in order to determine its aggregate wealth.

The real potency of credit is found in the facilities which it affords for the transfer of capital. It is a natural evolution of the great accumulations of saved capital in modern society. Capital could not be saved except in the form of commodities, as has been pointed out, if there were not money or credit; credit would be of little importance and small extent if there were not great masses of saved capital upon which it might operate. Bagehot, in describing the British money market, declared that it represented, "By far the greatest combination of economical power and economical delicacy that the world has

[1] *The Theory of Credit*, vol. i. p. 22.

ever seen."[1] This power and delicacy it owes to the means which credit affords for giving vitality to capital. Professor Cauwès sets forth four advantages of credit in promoting production.[2] (1) Credit stimulates the movement of business, multiplies markets for the benefit of capital, creates the means of buying and producing; (2) for those who have, credit provides a profitable investment for funds which they would not or could not themselves make use of; (3) for those who conduct an enterprise it affords the supplementary capital which they need for carrying on their business; (4) for all producers, credit represents a gain of time, and therefore of money.

Professor Leroy-Beaulieu, in a careful review of the effect of credit, ascribes to it the three important functions of permitting the transfer of capital, promoting its accumulation, and affording an auxiliary to metallic money.[3] The transferability of capital is perhaps the most important phase of credit in its modern development. This quality of transferability permits the shifting of capital from one trade to another and from one country to another. It gives flexibility to modern industry. It permits the man who has made savings, but is not engaged in an occupation in which he can employ them, to transfer them to those who can employ them. The system of banking credits, which gives to saved capital general purchasing power, permits the transfer of such credits to borrowers who are able to employ them in great producing industries. Capital is thus transferred from the hands of many small capitalists into the hands of a producer and is made profitable to the whole community. But credit gives to capital a greater degree of transferability than this. It affords the opportunity for diminishing the capital employed in an industry which is proving unproductive and increasing the amount employed in an industry which is proving attractive by increased profits. How this is done is described by Bagehot as follows:[4]

[1] *Lombard Street: Works*, vol. v. p. 8.

[2] *Cours d'économie politique*, vol. ii. p. 263.

[3] *Traité d'économie politique*, vol. iii. p. 374.

[4] *The Transferability of Capital: Works*, vol. v. p. 286.

There is the whole of the loan fund of the country lying in the hands of bankers and bill brokers, which moves in an instant towards a trade that is unusually profitable, if only that trade can produce securities which come within banking rules. Supposing the corn trade to become particularly good, there are immediately twice the usual number of corn bills in the bill brokers' cases; and if the iron trade, then of iron bills. You could almost see the change of capital, if you could look into the bill cases at different times.

One of the most striking cases of the transferability of capital in modern times is its transfer between nations. When Ricardo wrote early in the present century, he drew a distinction between the adjustment of prices within a nation and their adjustment between nations. "The difference in this respect," he declared, "is easily accounted for, by considering the difficulty with which capital moves from one country to another, to seek a more profitable employment, and the activity with which it invariably passes from one province to another in the same country."[1] The events of the last half century have almost abolished this distinction. Capital flows freely from one nation to the other under the attraction of differences in the discount rate and profitable investments. The transfers due to the discount rate are the best illustration of the transferability of capital, but they have less effect upon the permanent economy of a nation than the transfers which have taken place from other causes and for longer terms. The law of the marginal utility of capital gives it a higher earning power in new countries, where there is little saved capital, than in old countries, where there is a comparative excess. The result has been to attract great masses of the saved capital of old countries to the less developed countries.

The manner in which capital is thus transferred from one country to another, affords the best illustration of the workings of the credit system and the benefits which it has conferred upon society. This saved capital of the old world has been transferred to the new world almost altogether by means of the credit system. It would not and could not have been transferred without it. The transfer has not been made to any considerable extent in metallic money, but in commodities for which credit has been

[1] *The Principles of Political Economy and Taxation*, p. 116.

granted. The credit system has made possible the proposition, that international loans are made in commodities and not in money. The new countries have been developed by the transfer to them of commodities, for which the full equivalent has not been demanded back. Great Britain, for instance, has furnished to these countries great quantities of agricultural and manufacturing machinery, as well as the more perishable commodities or immediate consumption, and has been contented with the payment of the interest on their value rather than with payment in full. The British manufacturer himself may have received full payment, but other Englishmen have provided the means of payment by purchasing the government and industrial securities of the new countries. The effect of the operation has been that they have turned over their saved capital to the manufacturers of the machinery and commodities in England, on behalf of the purchasers in the undeveloped countries, and have accepted in return only an interest on their loan to these countries. This transfer of capital has afforded at once a means of development of the new countries and a means of earning a return upon their capital to the older countries. Mr. Noyes has vividly set forth the eagerness with which Great Britain was engaged, from 1886 to 1890, "in developing the resources of young foreign communities, taking securities in payment."[1] During the five months from February to August, 1890, 100 million pounds in new securities were brought out on the London market. Only by some such process as this could the great and rapid development have occurred which has taken place west of the Mississippi, in Australia, in Japan, and in South Africa within the memory of men still young.[2] Very different has been this development from that of the colonial settlements of the sixteenth and seventeenth centuries, when the colonists had in some degree to begin where the first semi-civilized people began, with only a small equip-

[1] *Thirty Years of American Finance*, p. 156.

[2] Foreign capital invested in the United States was estimated in 1895 to amount to 2,500 million dollars.—*Vide* CONANT, *Modern Banks of Issue*, p. 526, note. The British capital invested in joint stock companies in Australia in 1897 was £386,801,000 (1,928 million dollars).—London *Economist*, September 17, 1898, vol. lvi. p. 1353.

ment of the tools of production and under the necessity of great sacrifices in order to set aside from their annual product the means of increasing their tools of production for the future.[1]

The promotion of saving and the conversion of saving into working capital constitute the second group of advantages belonging to credit. "Capital," declares Professor Leroy-Beaulieu, "is saving become active and applied to production, instead of simply hoarded." In countries where credit is not diffused, he says, "small capitals remain in a state of isolation and unproductiveness, constituting an individual resource for the future, but not an immediate social resource."[2] But he shows, under the head of capital, that "Thanks to the division of labor in modern societies, simple saving, provided it is followed by an investment, is equivalent to capitalization."[3] How banking credits operated from the beginning to make capital fruitful is described by M. Guillaume de Greef in this language:[4]

> When advances of money or merchandise are involved, such capital is not augmented by credit; its vitality only is increased. We have already seen that banks of deposit, transformed naturally by the course of events into banks of discount and advances, were the first forms of the generalization of this important service. They centralized available capital, and substituted themselves at least in part for private forms of deposit, of loans, and of exchange. They distributed capital, which had been tempted and accumulated into their reservoirs, in all directions where it would be most active and most fertile. Its flow, abundantly and constantly fed by a thousand individual streams, became more regular and extended over wider spaces with an enormous economy of time, of risks and of costs. The rates and variations of the offer and demand of capital became less excessive, thanks to their influence, even in private operations; they tended to a level, like a genuine system of irrigation over areas of culture more and more extended. In this sense and within these limits, credit was still a force only indirectly productive. It gave to those who obtained it a purchasing power which they had not before possessed. It tended also to raise prices—not as is declared

[1] There are several other means than the purchase of securities—such as the grant of long mercantile credits, by which the old countries extend credit to the new, but it is the principle here which it is intended to discuss, and not the details.

[2] *Traité d'économie politique*, vol. iii. p. 387.

[3] *Ibid.*, vol. i. p. 218.

[4] *Annales de l'Institut des Sciences Sociales*, July 1897, vol. iii. p. 234.

by J. S. Mill and the larger number of economists, by reason of the securities which might be created, but in exciting new demands for utilities. When a consumer has credit with his storekeeper, he increases his demand and influences prices to the same extent as if he paid cash; it is the same with advances made with a view to production.

In much the same manner speaks Professor Horn, with special reference to the stimulus given by credit to saving:[1]

From the hand which does not know how to put them to use, savings are carried by credit where they become fertile. Credit, by the prospect of this fertility, stimulates the creation and accumulation of capital, the sole means of increasing the national wealth. Every working faculty, physical or intellectual, is enabled by credit to obtain the aid which is indispensable to make it a productive force. Thanks to credit, productive forces, once set in motion, are capable of continued activity, the merchant and manufacturer no longer being obliged to await the return of the equivalents acquired by parting with their products.

The development of credit in its various forms has followed the same law of evolution as the development of the use of money. Gold, the highest form of metallic money, has come to play only a subordinate part in exchanges and has become chiefly a money of account rather than a medium of exchange. The process of this evolution is disputed by Professor Hadley, who says:[2]

We are told that people first pass through a *régime* of barter, where goods are exchanged for goods, then follows the use of money as a means of transfer; and this in turn, in the highest stages of industrial evolution, gives place to credit. This last statement is hardly warranted by the facts. The tendency of recent times seems to be pretty clearly in the direction of an increased use of cash in mercantile transactions. It is in semi-civilized countries like Turkey that we see the fullest operation of the credit system. It is doubtless true that highly organized communities do some things on credit which less advanced communities cannot do at all. But when such operations have once become established, the tendency is towards an increasing

[1] *La liberté des banques*, p. 110.

[2] *Economics*, 233. Professor Leroy-Beaulieu approves the classification rejected by Professor Hadley, as indicating the dominating factor in exchanges at different periods, but insists that the different factors have operated and continue to operate side by side — that credit was not unknown in primitive times, and that barter is not unknown to-day.—*Traité d'économie politique*, vol. iii. p. 351.

use of cash in their consummation; a practice which saves time, saves waste, and saves middlemen's profits.

Professor Hadley is correct in maintaining that the richer nations employ more metallic money than the poorer, where it is a convenient medium of small transactions. They can better afford to make an investment of their surplus capital in a metallic medium of exchange. This circumstance, however, should not obscure the fact that the development of credit has made metallic money a smaller factor than formerly in the whole volume of exchanges. More transactions may be settled "cash down" but the form of payment is likely to be one of the credit instruments of modern banking. This is sufficiently evident from the diminishing proportion of coin found in the settlement of banking and clearing transactions in all recent inquiries. Gold remains the money of account, by which values are expressed, but it has ceased to be the medium of exchange, except in the smaller transactions of daily life and in the settlement of balances. The greater transactions are settled by the form of credit known as the bank note, by foreign bills of exchange, or by the mechanism of deposit accounts, checks, and drafts. The relegation of gold to a special place as the standard, or money of account, is in accordance with the modern tendency to the separation of functions, which thus provides a distinctive place for the metals, while transferring the duty of a medium of exchange to the paper representatives of the value of commodities. So uniform throughout the world has been this evolution, where commerce has attained serious importance, that M. de Greef declares that:

> The appearance in the economic world of substitutes for metallic money was an organic development so necessary and natural that it occurred with remarkable uniformity and in the most spontaneous manner among the most advanced commercial peoples of antiquity, and again, under the same conditions, after the undisputed decline of the first mediæval period, among modern commercial peoples. No man of genius has attached his name to the discovery, which was, nevertheless at once one of the most decisive, most important and most simple of human revolutions.[1]

[1] *Annales de l'Institut des Sciences Sociales*, July 1897, vol. iii. p. 234.

The process of the evolution of substitutes for metallic money first introduced the compensation of one item against another, and afterwards the deposit account with transfers by written order, the bill of exchange, and the transferable deposit receipt. The bank note, only partly covered by the metallic reserve, was a later growth. The first bankers at Athens and Rome confined their operations largely to the exchange of metallic money. Xenophon declared that the larger number of the cities of Greece had money having value at home and that traders at such places were compelled in consequence to make exchanges in merchandise, but that Athens was an exception and that her silver drachmas were accepted everywhere. Deposits were regularly received by the Athenian bankers and it soon became apparent that advantage would be derived from loaning the deposits. In Athens loans were sufficiently profitable to justify the payment of interest to depositors. Maritime traffic was conducted at such great profits by the Greek traders that they were able to borrow at 20 to 25 and even 35 per cent. and make a profit upon their ventures. Pledges of valuables were often taken by the bankers in such cases, but disaster sometimes occurred and serious bankruptcies resulted.[1] The bankers in Athens were known as *trapezitai* and those in Rome as *argentarii* (dealers in silver).[2] The banking business was subjected to official regulation in both Athens and Rome. The Roman laws required the *argentarii* to produce their accounts for official inspection and prescribed that they should keep a cashbook, a deposit book, and a daybook.

The transfer of credits was permitted at Athens by the law of Solon, and commercial paper from Phoenicia and Egypt was negotiated upon the Athenian market. The fact that the bankers conducted the exchange of the money of all countries naturally

[1] CRUCHON, *Les banques dans l'antiquité*, p. 29.

[2] M. CRUCHON enumerates more than sixty titles of different classes of persons dealing with monetary matters at Rome. Some of these were public officials, and the exact character of the business done changed from time to time, even where old names were retained.— *Les banques dans l'antiquité*, p. 35.

made them authorities in monetary matters. At Athens they kept accounts for their clients, which they were compelled to produce upon requisition, and their accuracy and technical knowledge led to their frequent employment for verifying the accounts of the republic. From such conditions arose the system of compensation, or setting off of one account against another. How naturally this system arose is set forth by Mr. Jevons:[1]

> Those who frequently traded with each other, both buying and selling, found that it was absurd to pay a sum of money for what was bought, and then receive it back for what was sold. It was sufficient to estimate in terms of money the values of the articles exchanged, and then pay the difference, if any, in actual cash.

Creditors at Athens preferred to be paid at the table of the banker, in the market place, to avoid the danger of receiving debased money and to escape the care of guarding and holding unproductive coin. Debtors, on their side, found an important advantage in the fact that the books of the banker afforded a proof that their debt had been discharged. After payments in the presence of the banker became common, it was an inevitable step, where both parties had accounts with same banker, that the transactions should be effected by a transfer, the simple entry of the payment and credit on the two accounts, without the intervention of metallic money. There is reason for believing that instruments of commercial credit were in use in Assyria, even while the precious metals passed by weight, and before the employment of official coinage. Traces of credit by compensation and by transfer orders are found in Assyria, Phœnicia, and Egypt before the system attained full development in Greece and Rome. The books of the old Sanskrit lawgiver, Manu, are full of regulations governing credit. He speaks of judicial proceedings, in which credit instruments were called for, of the interest on loans, of bankers, usurers, and even of the renewal of commercial paper.[2] The commercial obligations of Assyria were imprinted on cakes of clay, specimens of which have come

[1] *Money and the Mechanism of Exchange*, p. 192.

[2] CRUCHON, *op. cit.*, p. 14.

down to modern times. They are supposed to date from the eighth or ninth centuries before the Christian era, and include simple acknowledgments of indebtedness, bills guaranteed by a third party, bills transferring credits to a third party, and bills drawn from one place upon another.[1]

The mechanism of credit at Rome was in some respects less advanced than in the ancient civilizations of Asia.[2] Instruments of credit are recognized in the earlier Imperial laws and in the Justinian Code, but the night of barbarism, which obscured letters and the arts in the western world during the Middle Ages, destroyed for a time the security of commercial transactions and the system of credit depending upon such security. It remained for the Jews to frame again the theory of bills of exchange and for the merchants of the Italian cities to lay the foundations of modern banking.[3] It was at Lyons, the entrepôt of Italy in the Middle Ages, that bills of exchange first became common in modern times, and it was there also at the fairs that the settlement of debts by compensation was accomplished while legal safeguards were too slender to justify extensive credit transactions. The operation is described by Professor Macleod as follows:[4]

> Merchants in France and other countries did not make their bills payable at their own houses, where they must have kept large sums in specie to meet them, but they made them payable only at these great fairs. In the meantime their bills circulated throughout the whole country, and performed all the functions of money. On a fixed day of the fair the merchants met together and exchanged their acceptances against each other. By the principle of *compensation*, which will be more fully described in a future chapter, these acceptances exchanged, reciprocally paid, discharged, and extinguished each other. Boisguillebert, the morning star of French economics, says, that at the fair of Lyons, 80 millions of bills paid and discharged each other, without the use of a single coin.

[1] LENORMANT, *La monnaie dans l'antiquité*, vol. i. pp. 114–117. M. Lenormant presents French translations of five of these curious documents, and declares that many which have not been published exist in the British museum.

[2] LENORMANT, *op. cit.*, vol. i. p. 121, note.

[3] *Vide* BLANQUI, *Histoire de l'économie politique*, vol. i. p. 193.

[4] *The Theory of Credit*, vol. i. p. 95.

The revival of banking inevitably waited upon the restoration of social order and the extension of commerce which followed the discovery of the new world. How it began within narrow circles in Italy and Spain and how it extended with the growth of commerce cannot be narrated in this article.

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INDUSTRIAL DEMOCRACY.

SOME of the recent literature on industrial conditions in Great Britain seems to indicate that the issues between the schools of individualism and collectivism are becoming more clearly defined by the modification of each in the direction of the other. On one side we have the works of Mr. and Mrs. Webb and Mr. Lloyd, representing what might be called the evolutionary democratic attitude, and on the other there are MM. de Rousiers and Demolins, followers of Le Play, representing a modified individualistic position.[1]

M. Demolins draws a distinction between societies organized on a communal and those on a particularistic basis. He says:

> The communal societies are characterized by the tendency to rely, not on themselves, but on the community, on the group, family, tribe, clan, public authorities, etc.; populations of the Orient are the chief representatives. The particularistic societies are characterized by the tendency to rely, not on the community, but on themselves; the Anglo-Saxons are the chief representatives of this class. In the particularistic formation, instead of making the community predominate over the individual, the individual predominates over the community, private life over public, and, consequently, the useful professions over the liberal and administrative professions.

It is evident that the distinction between communal (or communistic) and particularistic is not a clear one, and is best defined by Demolins's explanation that a particularistic society is founded on an industrial rather than a social or political basis. If this is the legitimate interpretation of his words, it will be seen that the merits and weaknesses of his book are those of a Frenchman and a follower of Le Play. He is accustomed to political rather than industrial democracy, and he is a

[1] SIDNEY and BEATRICE WEBB, *Industrial Democracy*, 2 vols., London: Longmans & Co., 1898; HENRY D. LLOYD, *Labor Copartnership*, New York: Harper Brothers, 1898; EDMOND DEMOLINS, *A quoi tient la supériorité des Anglo-Saxons*, Paris, Firmin-Didot, 1897 (Anglo-Saxon Superiority, New York: R. F. Fenno & Co., 1898); DE ROUSIERS, *The Labor Question in Great Britain*, London: Macmillan & Company, 1898.

student of the family or the social group rather than of organization *per se*. This is emphasized in his further contention that the Anglo-Saxons are the particularists *par excellence*. Among them he finds that the habitation is of less importance than in the other races, and the families change their habitation more readily. Yet in this peripatetic habitation he finds (1) the comforts which develop in the Anglo-Saxon more than in continental peoples the sentiments of dignity and independence; (2) that this mode of establishment predisposes to effort; (3) that this mode of establishment produces "gentlemen." Demolins is very much impressed with the superiority of the English "home" to the French "*foyer*," but he has not carefully traced the intermediate steps from the days of the old communal Celts and Normans who gave place to the particularistic Anglo-Saxons, down to the modern democratic British society. He neglects the mingling of racial characteristics under the influence of industrial expansion. The Anglo-Saxons have been so practical and illogical that they have allowed their society to develop in response to the demands of modern industry, in spite of political theory, whereas the French have had imposed on them a quasi-democracy and a bureaucratic system of education, the legacies of Rousseau and Bonaparte. The Frenchman is not able to see that education may be particularistic (or individualistic) without industry's being individualistic. There is a confusion of individualism and *laissez faire*. Demolins describes at length two educational experiments in Great Britain, the Edinburgh Summer Meeting, and Dr. Reddie's school at Abbotsholme (see also Demolins's *L'Education Nouvelle*, Firmin-Didot, Paris) which, while they are natural developments of Anglo-Saxon democracy, are considerable advances over the general system of education in Great Britain. There is certainly no question as to their superiority to the French method of the education of "functionaries," as Demolins would call it. De Rousiers says:

> In France, on the plea of the necessities of this training, the child is required to choose his career on leaving the primary school. If he wishes to rise he must shun the practical side and devote himself betimes to study-

ing programs and preparing for examinations. On this condition and no other can he become an engineer. In England and Scotland, on the other hand, he may work for his living at the practical part and at the same time try to rise higher. If he succeeds he will have less general knowledge than in France; if he fails, he will merely fall back to his position as working man; he will remain a mining surveyor or underground manager, but will he not be *déclassé*.[1]

The *déclassé* is an individual trained to practice a specialism for which he has not the necessary aptitudes, unaccustomed to ordinary manual work, and incapable of earning his living as a working man. Such men exist wherever schools for training specialists require all their time and keep them in pupil-age until they are eighteen or twenty. Where the technical school deals with men actually engaged at the work, and aims at completing the knowledge they have acquired in their practical work by the necessary intellectual work there cannot be *déclassés*.

In other words, there cannot be *déclassés* where individuals are classified by their recognized aptitude for direction, instead of by an artificial process of selection.

It is of course fair to ask: How can British education be more individualistic than French unless Great Britain is more individualistic than France? Perhaps this may be answered by recurring to Demolins's description of the English home. To defend its superiority on the ground that the comforts of the Anglo-Saxon develop the sentiments of dignity and independence is to beg the question. Whence come the comforts? It would seem fair to contend that Anglo-Saxon comforts are due to organization, association with others in social pursuits, education, democracy, all of which have their roots in industrial organization. Demolins points out that the House of Commons is much more representative of the different classes of the people than the Chamber of Deputies.

	Chamber of Deputies.	House of Commons.
Functionaries of the state	95	47
Army	6	66
Liberal professions	270	107
Commerce	22	100
Industry	41	131
Agriculture	72	132

[1] "I do not know an English equivalent of this word," says M. de Rousiers, "and I do not think there is one. The phenomenon is not an English one."

Is it not possible to explain this also on the ground that industrial organization and an education founded on that have made such representation possible?

In one of Demolins's most suggestive chapters he asks: "Why are the Anglo-Saxons less hospitable to socialism than the Germans or the French?" After pointing out that the socialism of the continent of Europe is of German origin, he says: "There is virtually nothing to tell of socialism in England except insignificant efforts like those of Aveling, a Marxian, and those of the poet Morris, and Hyndman, two eccentrics whom no one takes seriously." Either Demolins fails to understand socialism in Great Britain, as nearly all the continental students do, or a distinction must be made between social democracy and industrial democracy. He claims that socialism flourishes better among the societies which in past times have been dominated by the communistic method, the chief exceptions to this method having been the Romans and the Anglo-Saxons; but M. Demolins does not understand the industrial organization of Great Britain. His local studies, like those of de Rousiers, prevent a comprehensive view of industry. He does not understand the trade unions even. He says that they differ from those of Germany in not only not being international, but not even being national, including only special groups of workers with a very limited aim. They have been content to strive by legitimate means to secure a better standard of life. To gain this they have demanded nothing of the state. The fact is the culmination of trade-union activity has nearly always been in an appeal to the state to supplement the work of the union; to generalize what the union was able to accomplish locally and spasmodically.

Perhaps the importance of industrial organization and the possibility of a new condition arising to supplant both the communal and the particularistic methods, may be seen by referring to Demolins's judgment on the Celt. It is not independence which distinguishes the Anglo-Saxon from the Celt, but rather interdependence, organization, without loss of liberty, which is

possible where the organization is democratic. Demolins and others have recognized that the fault of the Celt was his independence, which may, however, be the fault of the economic class to which he belongs, rather than the race. Demolins's colleague, de Rousiers, says:

> The Englishman is less simple and more exacting than the Scotchman. Industrial and commercial prosperity have had a longer time to penetrate, and the Englishman's principle is to live well and work well, and to aim at increasing his earnings instead of diminishing his expenses. The Scotchman is now tending more and more toward this conception, but it is less deeply rooted in his case, in the first place, because the industrial element is less marked in this country, and in the second, because of his social origin. The population of the Lothians, the wealthy part of Scotland, receives a constant influx from the poor countries adjoining the Highlands and the Hebrides. Emigrants from these districts bring with them the patriarchal habits they have adopted, and without which it would be impossible to live there. In a mountainous district where cultivation must necessarily remain rudimentary and industry does not arise, and where the chief resources are derived from scanty pasturage and from fishing on a good but dangerous coast, there is a very clear realization of the inflexible limits which nature has set to production. Human effort encounters insurmountable obstacles, and wisdom therefore consists in limiting wants to what circumstances demand, since it would be sheer imprudence to trust in laborious energy whose results might be lost through the inability of the soil to repay them. Where, however, the intense industrial régime opens an unlimited field to the action of labor, wisdom consists in developing in a man the greatest possible efficiency. The right course is to put oneself in good form, and to spare nothing to increase one's power of work. Experience has shown that this course pays best and consequently there is a general tendency among the workers to have better food, better houses, better clothing, better instruction, and to conduct themselves better morally — all conditions which contribute, though in unequal degrees, to the most complete development of the human being.

How this transformation can be brought about may be indicated by the progress in co-operative dairying among Irish farmers, as described by Mr. Lloyd, or the great promoter of the movement, Mr. Plunkett. The latter says:

> I was talking the other day to a German economist (Dr. Moritz Bonn), who has for the last two years been making a close study of Irish economics in every part of Ireland, as to the reasons why English policy had so signally failed to promote the material welfare of Ireland. He tersely replied: "It is

an attempt to impose individualism upon the country without educating the individual!"

This education in England has been the product of several centuries of unconscious commercial and industrial evolution toward democracy. That it can be accomplished among a less advanced people under guidance Mr. Plunkett indicates when he says:

> The superior persons who criticised our first endeavors at organizing dairy farmers told us that the Irish can conspire, but cannot combine; that voluntary association for humdrum business purposes, devoid of some religious or political incentive, was alien to the Celtic temperament, and that we should wear ourselves out crying in the wilderness. Economists assured us that, even if we ever succeeded in getting farmers to embark in the enterprise, financial disaster would be the inevitable result of the insane attempt to substitute, in a highly technical manufacture, democratic management for one-man control.

They then boldly tried to impose new forms of industry and of industrial organization at once. The aim may be briefly explained again in Mr. Plunkett's words: "This kind of education makes all the difference between *a people whom the government can help* and a people whom state interference only renders less self-supporting." The sting of paternalism is drawn by democracy.

It is time to raise the question again: Is there a distinction between industrial and social democracy, and what is the difference between these and individualism? The familiar statement of the socialists is that the true social order is founded on the principle: "From each according to his ability, to each according to his needs." Against this we might set as the principle of individualism, "From each according to his ability, to each according to his ability." Let us contrast with these as a hypothetical principle of industrial democracy, "From each according to his ability, to each according to his efficiency."

Social democracy seeks to insure the elevation of the standard of living by the recognition of ability; it might be safer to say, by the recognition of service, were it not for the fact that social democracy has not yet abandoned the dogma of equality.

The social democrats have confidence that the standard of living will advance in this way because of their faith in the possibilities of individuals if equality of opportunity is offered. At the same time it seems fair to say that the standard of living is not well defined among them. There is still a quantitative rather than a qualitative estimate of life as a consequence of the materialistic basis of their philosophy. The harmony of extreme socialism and extreme individualism, which has been pointed out by thoughtful writers,[1] might be found in the fact that individualism also seeks to insure the elevation of the standard of living by the recognition of ability. The individualists, however have to set over against the socialist dogma of equality a kind of economic Calvinism, which guarantees the triumph of ability. Perhaps it ought to be said that only the most enlightened individualists consider the question of a standard of living, the majority being content if earnings are increased, which make saving possible, thus providing for subsequent earnings—to end in the deluge. The aim of industrial democracy we may again state in these words: It seeks to insure a standard of living which will secure the highest efficiency. Whether the representatives of the other systems would accept the characterizations made of them, the aim of what is denominated industrial democracy in Great Britain seems clear. The immediate goal is the elevation of the standard of living; the ultimate goal, greater efficiency.[2]

The chief forms of industrial democracy in Great Britain are the trade union, the co-operative society, and the friendly society. Where these prove inadequate to the accomplishment of their objects there is often an appeal to the state, which is, however, always looked upon as an adjunct to the more familiar and fundamental industrial organization. Mr. and Mrs. Webb's book deals with the trade unions, and Mr. Lloyd's with that

[1] *E. g.*, MACKENZIE, *Introduction to Social Philosophy*, chap. v.

[2] "The first condition of an efficient organization of industry is that it should keep everyone employed at such work as his abilities and training fit him to do well, and should equip him with the best machinery and other appliances for his work."—MARSHALL, *Economics of Industry*, p. 162.

form of co-operation known as labor copartnership — that is, productive co-operative societies, giving workmen a share in the profits and the management. The number of people identified with the Rochdale system of co-operation and the friendly societies, which the scope of this article precludes our considering, is probably five or six million. They are numerically as important as those affected by the organizations we shall consider, but the influence of these latter on industrial democracy may be said to be more considerable. It must, however, be borne in mind that any workingmen's organization, founded on a democratic basis, provides an education in democracy which is of immense importance to the state.

Among the problems to be met by industrial democracy are:

1. The forms of organization which best insure democratic representation.

Miss Beatrice Potter (Mrs. Sidney Webb) gives four types of co-operative societies:

> Class I. Associations of workers formed on the Christian Socialist model; selecting the committee of management from among their own numbers, and employing members only.
>
> Class II. Associations of workers of like character; but which have bound themselves over to, or had imposed upon them, an irremovable governor or irremovable committee men.
>
> Class III. Associations of workers governing themselves, but employing outside labor — practically small masters.
>
> Class IV. Societies in which outside shareholders and stores supply the bulk of capital, but in which the workers are encouraged or obliged to take shares, although they are disqualified from acting on the committee of management.

To these must be added the type of which Mr. Lloyd writes:

> Class V. Societies in which outside shareholders and stores supply the bulk of the capital, but in which the workers are obliged to take shares and are permitted participation in management.

1. The beginnings of democracy in factory management are indicated by Mr. Lloyd:

> "We have no objection," the salutatory of Labor Copartnership said, "to part of the capital being owned by persons not employed and part of the control being exercised by them. . . . Modern industry more and more requires

larger amounts of capital than the actual workers can themselves provide, at any rate at starting; and, further, the presence of outside members, whether individuals, stores, or labor organizations, should act as a moderating and impartial element." Copartnership says only that labor shall share in ownership, management, and results. It asks for all workers such a voice in the management of their own industry as democracy demands that the people should always have in their own affairs. Composed of co-operators and springing up within the co-operative movement, it seeks this, first, in co-operative territory, but it considers it to be its duty to promote this policy even in private business and in government employ.

Mr. Lloyd says in description of the Equity Shoe Works in Leicester:

Every workman is made a shareholder in the factory by the retention of his bonus and its accumulation until it pays for the minimum amount of stock necessary. Every workman must therefore be a shareholder, and every workman or workwoman is eligible to every position in the management. One of the working women was once elected a member of the board, and fulfilled the duties of the position to the satisfaction of its members. Like many other co-operative societies, the Equity Shoe Works have had more capital offered to them than they could keep profitably employed; and just before I was there the directors had temporarily closed the capital account. Middle-class people were attracted by the merits of the stock as an investment, and were beginning to subscribe sums of $500 and $1000, either for shares or for loan capital. In his speech at the opening of the new factory in 1894 Mr. Holyoake said: "This society has $55,000 of capital. Why, fifty years ago, had a few unknown workmen asked to be entrusted with $55,000 of capital, they would have been told they would not get it in eleven thousand years. Nor would they now, were it not that workingmen co-operators all over the country have trust in the honor and ability of men of their own order."

There is a serious dispute between Mr. Lloyd and Mrs. Webb, which is only typical of the conflict constantly going on in Great Britain, as to the respective merits of the Rochdale system of co-operation and labor co-partnership. Each is in error in denouncing the other as capitalistic, as though this necessarily condemned either. The societies which are united through the English or Scottish Wholesale Society, and which thereby have a complete system of industry, from the store to the workshop or farm, founded on the very democratic methods of the Rochdale system, condemn labor co-partnership as reactionary, as inter-

fering with this national organization of industry, and as undermining the trade union. The labor co-partnership organizations, on the other hand, insist that there is a greater recognition of the workingman in their plan than in the other. It must be admitted that each is, in its way, both democratic and capitalistic. The Rochdale system employs its workmen on a wage system identical with that in operation in capitalistic concerns; while labor co-partnership employs the capital of independent capitalists who have no relationship whatever to the organization beyond that of drawing their dividends; yet each is democratic, both in its organization and aims. Their conditions do not seem to be irreconcilable but their interpreters must understand each other better than Mrs. Webb and Mr. Lloyd do. Mr. Lloyd quotes the statement of Miss Sybella Gurney, who says, in *Sixty Years of Co-operation*, "It required the growth of a better generation—a generation trained in the store, friendly society, and trades-union movements, as well as at school, before a large measure of success could be achieved."

The possibilities of a combination of the two co-operative systems are indicated both in the faith of co-operators and in their practice. Mr. Lloyd says:

> The amount of land that the co-operators could use is almost without limit. Hundreds of thousands of acres would be required for milk alone by the present co-operative population; hundreds of thousand more for the butter; one million acres for the meat. Then there are vegetables, fruit, and grain. "There is no reason," said Mr. Campbell, "why every large and wealthy society should not have its industrial village on its own estate within the next twenty years."

Two instances showing the application of this plan are those of the Leicester Hosiery Manufacturing Society, and the United Baking Society of Glasgow. Of the former, Mr. James Holmes, secretary of the Amalgamated Hosiery Operatives' Union, says in the *Workmen's Times:*

> They can show you a list of names at this place, as long as my arm, of people who are waiting to be taken on; but the mischief is nobody ever leaves, and it is only the vacancies caused by death, and the new situation created by the extension of the business that afford openings. One thing which makes

the place such a valuable one at which to work, is the fact that employment is very regular. They cater for a special line of customers, the distributive co-operative societies all over England, Wales, and Scotland; and the varieties of goods required by these societies are so great that there is nearly always work on hand, and if there is no order on the books, it is nearly always safe to work to stock.

The Glasgow United Baking Society furnishes the chief instance in the Rochdale system of a bonus to employees. So devoted are the co-operators in this system to the government by the Distributive Society, that the workers are not taken into partnership individually, but form the Bonus Investment Society, Limited, which only employees are eligible to join, and which has the right to send to the members' meetings of the United Baking Society, one delegate, and one in addition for each £80 of capital. Three hundred of the 934 workers employed have become members of the society. This seems a circuitous way to admit members to a share in the profits of the organization, but possibly points the way to a reconciliation of these important branches of co-operation, each of which has something to contribute to the other. In spite of this conflict the democratization of industry advances rapidly through these agencies.

Mr. and Mrs. Webb point out in their first chapter the great value of the trade unions as training schools in democracy.

These thousands of working class democracies, spontaneously growing up at different times and places, untrammeled by the traditions or interests of other classes, perpetually recasting their constitutions to meet new and varying conditions, present an unrivaled field of observation as to the manner in which the workingman copes with the problem of combining administrative efficiency with popular control.

The earliest forms of trade unionism were founded on the idea that representation by rotation served to educate all the members for executive positions. The importance of peculiar executive ability was not recognized.

Even when it was necessary to supplement the officers by some kind of committee, so far were these infant democracies from any superstitious worship of the ballot box, that, although we know of no case of actual choice by lot, the committeemen were usually taken, as in the case of the Steam-Engine Makers' Society, "in rotation as their names appear on the books." "A fine

of one shilling," say the Rules of the Southern Amicable Union Society of Woolstaplers, "shall be levied on any one who shall refuse to serve on the committee, or neglect to attend its stated meetings, ... and the next in rotation shall be called in his stead."

In passing from a local to a national organization, the trade union unwittingly left behind the idea of primitive democracy. The setting apart of one man to do the clerical work destroyed the possibility of equal and identical service by all the members, and laid the foundation of a separate governing class. The practice of requiring members to act in rotation was silently abandoned. Once chosen for his post, the general secretary could rely with confidence, unless he proved himself obviously unfit or grossly incompetent, on being annually re-elected. Spending all day at office work, he soon acquired a professional expertness quite out of the reach of his fellow members at the bench or the forge.

While everything was thus tending to exalt the position of the salaried official, the executive committee, under whose direction he was placed, being composed of men working at their trade, retained its essential weakness.

In face of so weak an executive committee the most obvious check upon the predominant power of the salaried officials was the elementary device of a written constitution. The ordinary workman, without either experience or imagination, fondly thought that the executive government of a great national organization could be reduced to a mechanical obedience to printed rules. Hence the constant elaboration of the rules of the several societies, in the vain endeavor to leave nothing to the discretion of officers or committees.

In 1837 the Liverpool Lodge demanded that "all the alterations made in our laws at the grand delegate meeting" shall be communicated to all the lodges "for the consideration of our society before they are printed."

Government by such contrivances as rotation of office, the mass meeting the referendum and initiative, or the delegate restricted by his imperative mandate, leads straight either to inefficiency and disintegration, or to the uncontrolled dominance of a personal dictator or an expert bureaucracy. Dimly and almost unconsciously this conclusion has, after a whole century of experiment, forced itself upon the more advanced trades. The *delegate* finds himself every year dealing with more numerous and more complex questions and tends therefore inevitably to exercise the larger freedom of a *representative*. Finally, we have the appearance in the trade union world of the typically modern form of democracy, the elective representative assembly, appointing and controlling an executive committee under whose direction the permanent official staff performs its work.

In the Amalgamated Association of Operative Cotton-Spinners, which may be taken as typical of cotton organizations, the "legislative power" is expressly vested "in a meeting comprising representatives from the various provinces

and districts included in the association." This "Cotton-Spinners' Parliament" is elected annually in strict proportion to membership, and consists of about a hundred representatives. It meets in Manchester regularly every quarter, but can be called together by the executive council at any time. Once elected, this assembly is, like the British Parliament, absolutely supreme. The forms of democratic organization in the trade union and co-operative society are the result of a process of selection more thorough than that applied to any political institutions of this century.

2. The success of democratic organization in trades unions and co-operative societies not only suggests the desirability of testing these organizations by the standards of democracy, in order to insure the harmonious action for the benefit of the largest number, but there is also suggested a criticism of undemocratic efforts to solve industrial difficulties.

The South Metropolitan Gas Company, of London, with a capital of 35 million dollars and receipts of over three million dollars, employing almost three thousand men, shares profits with them, and these workingmen shareholders elect two of themselves as directors of the company. This plan originated in an effort to put down a strike in 1889.

Mr. Livesey now declares his system to be "quite incompatible with trades unionism. The two things are diametrically opposed. Trades unions are the union *vs.* the employer; in our case it is the union with the employer, not against him." "Union of capital and labor is better than a union of laborers and a union of capitalists fighting each other," is one of Mr. Livesey's ways of putting his position. A copy of the contract offered the men was given me by Mr. Livesey. Its first section reads: "The said South Met. Gas Co. agrees to employ the said . . . . who says that he is not a member of the Gas Workers' Union." But Mr. Livesey, when before the Labor Commission in May 1891, said that membership of the unions by his men was being winked at as long as the members kept quiet.

Mr. Livesey has himself made it an argument against municipal ownership of gas works that municipalities having no stock could not admit their employees, as his company has done, to participation in profits and management; and he has repeatedly avowed that he believes that the Employee Shareholder and Workman Director is an institution which will make socialism impossible, because it will give the wage-earner the possession of property.[1]

[1] LLOYD, *op. cit.* pp. 198 and 212.

The recognition of this as a labor copartnership scheme justifies some of the criticisms of Rochdale co-operators.

3. These organizations must solve the problem of the preservation of liberty of individual action, in spite of the necessity of combination and organization. It seems much easier to preserve individual liberty, where the organization is strong and on a democratic basis, than where there is permitted independent, or undemocratic, action. The method of mutual insurance, by which, in a thoroughly organized industry, workers bring the employer to terms by leaving, one by one, would seem to satisfy the ideal of Demolins, if not of "free labor" associations. That is to say, it is the particularistic method. A perfectly voluntary association independent of the state becomes more coercive than the state could be. It is undemocratic, but is identical in character with the method of the employers who insist on dealing with individual workingmen, and deny the validity of collective bargaining. Where the organizations on both sides are very powerful, the friction is often so slight that interference with individual liberty is scarcely felt.

> The workmen's case for Trade Unionism and the employers' case against it both proceed on the same assumption. *Wherever the economic conditions of the parties concerned are unequal, legal freedom of contract merely enables the superior in strategic strength to dictate the terms.* Collective Bargaining does not get rid of this virtual compulsion: it merely shifts its incidence. Where there is no combination of any kind, the strategic weakness of the individual wage-earner, unable to put a reserve price on his labor, forces him to accept the lowest possible terms. When the workmen combine, the balance is redressed, and may even incline, as against the isolated employer, in favor of the wage-earner. If the employers meet combination by combination, the compulsion exercised upon individual capitalists or individual wage-earners may become so irresistible as to cease to be noticed. In the most perfected forms of Collective Bargaining, compulsive membership becomes as much a matter of course as compulsory citizenship.[1]

This reconciliation of liberty and combination is admirably illustrated in the antagonism to the small master.

> It must not be inferred that, because Trade Unions are opposed to the small master system, they have any objection to their members rising to

[1] WEBB, *op. cit.* vol. i. pp. 216, 217.

superior positions. The energetic Trade Unionist, often a branch official, is frequently selected for the post of foreman, which he accepts with the full approval of his fellow members. In some Unions this proposal involves his exchanging an active for an honorary membership, but in the building, engineering, and ship building trades foremen are welcomed as ordinary members. From foreman the superior man frequently rises to be manager, or even partner, in a large firm; and it would not be difficult to compile a list of great employers of today who were, in their wage-earning stage, staunch members of their Trade Unions. To the man of exceptional ability, the system of the Great Industry offers, indeed, more real opportunity of rising to eminence than was before open to him. The proportion of foremen and over-lookers to mere manual workers is no doubt smaller today than was the proportion of small masters to wage-earners two centuries ago. But the official hierarchy of modern industry affords both a safer and a higher ladder for special talent.[1]

The present effort in the London building trades to compel foremen to remain or become members of the trade unions indicates confusion on this subject. Democratic control is possible, as many unions remonstrate without dictation.

4. Provision must be made for the proper combination of private initiative and public action. It is commonly the case that state action can only be secured by a highly developed private organization, but that when this is secured, the state accomplishes what the private organization could not do, yet does this by the aid of the latter. It is frequently the case that an organization of workingmen may be very powerful as compared with other trade unions, and yet be impotent in the face of the strength of the employers' organization. In this case there is also a tendency to appeal to the state, made reasonable by the extent and democracy of the trade union rather than by the tyranny of the employers.

If the whole industry is controlled by a single colossal employer, or if it is distributed among a small number of non-competing employers — especially if the monopoly is in any way protected against new rivals — the Trade Union finds its methods of Mutual Insurance and Collective Bargaining practically useless. This is the case with the railway companies in the United Kingdom, and some of the great capitalist trusts in the United States. Against the unlimited resources, the secured monopoly of custom, and the absolute unity of will enjoyed by these modern industrial leviathans, the

[1] WEBB, *op. cit.* vol. i. p. 546.

quarter of a million accumulated funds of the richest Trade Union, and the clamor of even one or two hundred thousand obstinate and embittered workmen, are as arrows against iron-clads. In such cases the only available method of securing a Common Rule is Legal Enactment — difficult, in the face of interests so powerful, for the Trade Unions to obtain, but once obtained, in so highly organized an industry, easy of application and enforcement. We therefore infer that the extreme concentration of industry into trusts and monopolies will lead, either to Trade Union failure and decay, or else to an almost exclusive reliance on the Method of Legal Enactment.[1]

State action is necessary to secure equality of industrial units, but efficient only when supported by intelligent citizenship.

5. A declining trade presents a problem of extreme difficulty to the trade union. So great is it, indeed, and yet so inevitable in a progressive society, that it has only been met thus far, as we shall presently see, by a recognition of both the old and the new industrial methods, at the same time. Where this is not practicable, as is commonly the case, Mr. and Mrs. Webb suggest that it may be necessary to look upon the damage inflicted on a skilled operative by the decline of his trade as we would look on the injury done to a piece of property by the introduction of an obnoxious industry or institution into the neighborhood. They claim that it is not just in the one case to allow the property owner to secure indemnity, and in the other to allow no compensation to the workman. Whether such a remedy can be introduced or not may depend on the success with which organizations meet the difficulty which confronts many of the trades which are in process of transformation today.[2]

[1] *Ibid.*, pp. 553, 554.

[2] The Massachusetts Legislature of 1896 (chapter 450) has recognized the right to work as analogous to the right to property, and has provided, as an amendment to the Metropolitan Water Act, which had condemned the property of the village of West Boylston, a method of compensation to laborers similar to the compensation granted to property owners in proceedings under eminent domain. The Act reads:

"Section 1. Any resident of the town of West Boylston employed by any corporation, partnership, or individual at the time when the plant of such corporation, partnership, or individual is taken, and work therein stopped, on account of a reservoir for the Metropolitan Water Supply, and who is obliged, by reason of such taking, to

6. Organizations must be adapted to trades in which there is the possibility of both hand and machine labor. Mr. and Mrs. Webb describe a very interesting instance of this in the case of the Amalgamated Society of Cordwainers, founded in the eighteenth century, which had, up to 1857, enjoyed immunity from new processes. The sewing machine, between 1857 and 1874, revolutionized the trade. Workingmen at first resented the introduction of machinery, but their executive committee declined to support their opposition to the new processes, and urged them to combine with the new men who entered the factories. In a few years it was found that the union was composed of two classes — handicraftsmen and factory workers. As the latter began to outnumber the former, it was found wise for them to break off and organize a National Union of Boot and Shoe Operatives. The Amalgamated Society of Cordwainers has since then remained a body of handicraftsmen, working on in amicable relations with the new organization, but confining itself to the field of hand work. It has been able to preserve such a high grade of workmanship that there is a constant demand among wealthy people of good taste for these hand-made products, in spite of the continual extension of the boot and shoe factories. The same condition has been met in the paper industry. There is a steady demand for hand-made paper, which is met by workmen belonging to the organization which

seek employment elsewhere, shall have the right for one year from the termination of such employment as aforesaid, to file a claim for damages with the Metropolitan Water Commission, and if the same is not settled within sixty days within the filing thereof, he may bring a bill in equity in the superior court for the county of Worcester for the adjudication and collection of such damage. Any number of persons deprived of employment as aforesaid, may unite in such bill, and the withdrawal of any shall not prejudice the rights of others.

"Section 2. It shall be the duty of the court to ascertain whether or not such claimants have resided, and been employed, and deprived of employment as specified in this act, and, if so, to issue a decree in favor of each to recover the actual damage which he has suffered by reason of such loss of employment, not however, to exceed the sum of his wages for six months at the rate of wages paid to him for the last six months prior to such suspension of employment."

Sections 3 and 4 protect the state against imposition.—J. R. COMMONS, *Arena*, January 1899.

has not been affected at all by the new organizations of workers in machine mills. This differentiation of the trade union is an admirable instance of organizing capacity, but is only applicable to industries in which it is possible to preserve some of the old processes. There are cases where trades have been annihilated. Here some method of insurance or compensation seems the rational suggestion, if it can emanate naturally from the body of workers, who best know their needs.

7. The trade union must meet the problem of the introduction of women and unskilled workers, and the consequent decline of the quality of workmanship. There seems to be one instance of a successful solution of the problem of women in the great industry, and this is in the case of the cotton operatives where the women are admitted to the trade unions on a basis of equality with the men. The chief suggestion which Mr. and Mrs. Webb make for meeting the problem is the introduction of a national minimum:

> To give only two out of many instances, we can imagine nothing more calculated to improve the social position of women, and to render them economically independent of their sexual relationship, than the gradual introduction of a legal minimum wage, below which their employment should not be permitted. Nothing does so much at present to prevent women from becoming technically proficient in industry, and to deprive girls of incentive to acquire technical education, than their feeling that they can obtain employment as they are, if only they will accept low enough wages! The result of the low wages is a deplorably low standard of efficiency, due to lack alike of proper physiological conditions and of stimulus to greater exertions. The improvement in the capacity and technical efficiency of women teachers in the last twenty years, concurrently with the introduction of fixed standards of qualification by the Education Department, and, to some extent, the adoption by School Boards of full subsistence wages, is especially significant in this connection. The other instance is that of the casual unskilled laborer of the great cities. At present he knows that he can earn his miserable pittance by transient employment, without a character, without regularity of attendance day by day, and without technical skill. A legal minimum weekly wage would induce the employers to pick their men, and at once set up a Selection of the Fittest, for regularity, trustworthiness, and skill.

8. Foreign competition and local subsidies leading to par-

asitic trades are to be met in the same way as the competition of women.

> Unless the better paid occupations are to be insidiously handicapped in the competition for the home and foreign market, it is essential that no one of the national industries should be permitted to become parasitic by the use of subsidized or deteriorating labor. Hence the organized trades are vitally concerned in the abolition of "sweating" in all occupations whatsoever, whether these compete with them for custom by manufacturing for the same demand, or for the means of production by diverting the organizing capacity and capital of the nation. And this self-interest of the better paid trades coincides, as we have seen, with the welfare of the community, dependent as this is on securing the utmost development of health, intelligence and character in the weaker as well as in the stronger sections. Thus we arrive at the characteristic device of the Doctrine of a Living Wage, which we have termed the National Minimum — the deliberate enforcement by an elaborate Labor Code, of a definite quota of education, sanitation, leisure and wages for every grade of workers in every industry. This National Minimum the public opinion of the democratic states will not only support, but positively insist on for the common weal. But public opinion alone will not suffice. To get the principle of National Minimum unreservedly adopted; to embody it in successive Acts of Parliament of the requisite technical detail; to see that this legislation is properly enforced; to cause the regulations to be promptly and intelligently adapted to changes in the national industry, requires persistent effort and specialized skill. For this task no section of the community is so directly interested and so well equipped as the organized trades, with their prolonged experience of industrial regulation and their trained official staff. It is accordingly upon the trade unions that the democratic state must mainly rely for the stimulus, expert counsel, and persistent watchfulness, without which a National Minimum can neither be obtained nor enforced.[1]

9. The disruption of industry due to new processes, and the fluctuations due to mobility of capital and labor, lead to the necessity of the education of the workingman for both general and trade efficiency. This is the fact on which all of these investigators mentioned are agreed, and the need has been well stated above in the words of M. de Rousiers.

10. The gradual extension of the idea of a national minimum, from wages and hours to sanitation and education, may be said to mark the highest demand yet made by the trade unions. It

[1] WEBB, *op. cit.*, vol. ii. p. 816.

must be recognized that this is rational and desirable. The preservation of the standard of living of the various groups of workers in the country is essential not only to the happiness of each group of workers, but to the welfare of the country itself. It is not an arbitrary question, but one of historic origin, and the organization which attempts to meet it is as important to the national existence as the organizations which provide for the sustenance of life. There is an instinctive standard of living, the result not so much of concerted action as of the unconscious influence of environment. The classes of workers which have profited by industrial improvement and consequent comforts set a standard for those who have been the victims of progress. As Mr. and Mrs. Webb point out, this affects even the least skilled workers:

> If every artisan, without the slightest concert with his fellows, is possessed by an unreasoning prejudice that he and his family must consume wheaten bread, butcher's meat, beer and tea, instead of living on oatmeal, maize and potatoes, and water, the employer will find it useless to suggest that "any meal is better than none." He quickly discovers that if he offers wages which will provide only the cheaper food, no individual of the class that he requires will accept his situation.[2]

In addition to the instinctive standard there is, as has been said, the standard set by concerted action. The engineers throughout Great Britain would without hesitation decline to accept fifteen shillings a week, but there might be much doubt in different sections and at different times as to twenty-seven or twenty-nine shillings representing a just demand. The instinctive standard is inadequate, because without combined action workmen may be compelled to accept the standard set by the least exacting individual among them. The gradual advance enjoyed by most members of society as progress is made is quite unlike the advantage gained by individuals in the case of sudden prosperity, an advance which will be shared by the majority only when they are strong enough to insist on it. In spite of prosperity the instinctive standard will guide the employees unless organized labor exacts better terms. Yet it will be impos-

[2] WEBB, *op. cit.*, vol. ii. pp. 697, 698.

sible to get far beyond the instinctive standard if the majority of workers are unorganized, unless an appeal is made to the state to establish a national minimum. Here we find industrial democracy, guided by the experience of some organized workers and following the analogy of legislation in restraint of trade in other directions (notably the Factory Acts), suggesting that the general experience of the efficient workers demands that a standard be set for the inefficient or ineffectively organized, as a means of national defense. In the words of Mr. and Mrs. Webb:

> When any group of consumers desires something which is regarded as inimical to the public well-being — for instance, poisons, explosives, indecent literature, or facilities for sexual immorality or gambling — the community prohibits or regulates the satisfaction of these desires. When the directors of industry attempt to use a material or a process which is regarded as injurious — for instance food products so adulterated as to be detrimental to health, ingredients poisonous to the users, or processes polluting the rivers or the atmosphere — their Action is restrained by Public Health Acts. And when the workers concerned, whether through ignorance, indifference, or strategic weakness, consent to work under conditions which impair their physique, injure their intellect or degrade their character, the community has, for its own sake, to enforce a National Minimum of education, sanitation, leisure and wages. We see, therefore, that industrial administration is, in the democratic state, a more complicated matter than is naïvely imagined by the old-fashioned capitalist, demanding the "right to manage his own business in his own way."— In each of its three divisions, the interests and will of one or other section is the dominant factor. But no section wields uncontrolled sway even in its own sphere. The state is a partner in every enterprise. In the interests of the community as a whole, no one of the interminable series of decisions can be allowed to run counter to the consensus of expert opinion representing the consumers on one hand, the producers on the other, and the nation that is paramount over both.

It would seem fair to say in reply to the French critics that the efficiency which attracts the foreigner in British industrial conditions is the product of a standard of living consciously set by organized labor taking advantage of industrial progress. Through the trade union and the friendly society the working classes seek to make provision in times of prosperity against times of adversity. Through the general co-operative movement they seek to keep up the standard by getting a proper equivalent for their expenditures, while not forgetting to sustain the

standard of living in the case of their numerous employees. Through labor copartnership they desire to organize industry, to secure an even greater share of the benefits of industrial progress than the trade unions can exact from private employers. Finally, when other means fail there is an appeal to the state, on the one hand to conduct or supervise such industries as otherwise evade democratic control, and, on the other, to establish a minimum which will eliminate parasitic industries. In every case there is the attempt to secure the democratic organization of industry by methods which shall be introduced in response to a public opinion which will secure their efficiency.[1]

This tendency is directly opposed to the *laissez faire* principles which formerly prevailed, and which Demolins and others identify with individualism. Under this democratic regulation of industrial conditions there would appear to be greater scope for individuality than under unrestrained industry. The new principle which these new conditions furnish is that where industry is so highly organized as to permit of democratic control, and the individuals concerned are so well educated as to be able to make this control effective, the field of private initiative must be shifted. It is at once unnecessary if the industry is so far advanced as to adequately satisfy public needs, and undesirable because newer fields are left undiscovered or undeveloped when rare ability and ingenuity are absorbed in established enterprises. The present experience in Industrial Democracy also demonstrates as against some socialists that training in administrative affairs is necessary to any democratic control of industry, and as against some individualists, that this training furnishes an adequate reason for encouraging this tendency in spite of time honored political and economic theory.

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[1] "These tendencies towards collective ownership and collective action are quite different from those of earlier times, because they are the result not of custom, not of any passive drifting into association with one's neighbors, but of free choice by each individual of that line of conduct which, after careful deliberation, seems to him the best suited to attaining his ends, whether they are selfish or unselfish."—MARSHALL, *Economics of Industry*, pp. 5 and 6.

SOME SOCIAL APPLICATIONS OF THE DOCTRINE OF PROBABILITY.[1]

I.

THE CLASSIFICATION OF HUMAN CHARACTERISTICS.

With the increasing complexity of the life of civilized man, with the more minute division of labor and the greater differentiation of individuals, the mental traits of men become extraordinarily diversified. This statement will doubtless be readily accepted by all. Its truth is shown by our ordinary habit of speech. What fine distinctions we make, for example, between curiosity, inquisitiveness, thirst for knowledge, and the instinct of investigation. Or again, what subtle discriminations we make between industry, patience, assiduity, activity, endurance, perseverance, application, and complete devotion. Speech is, indeed, too poor to designate all the shades of meaning which intervene in such a series of synonyms, and we are often in doubt whether we shall call a certain characteristic by one or another name. The mere catalogue of the terms that we use to designate the mental traits of men would fill many pages, and the exact definition of each and all of them would be no light task. The traits themselves are yet more numerous and many-sided.

It is important to realize that these traits differ not only qualitatively, but quantitatively. We have, indeed, no scale or standard for measuring the mental powers so exactly as the bodily forces are measured by the dynamometer. Yet we are fully convinced that great quantitative differences prevail — for example in point of intelligence. Thus we speak of genius, of talent, of ability, of mediocrity, of inefficiency,

[1] Translated with additions and notes by Carlos C. Closson.

[These pages are from Otto Ammon's *Die Gesellschaftsordnung und ihre natürlichen Grundlagen* (second edition, Jena 1896), an English translation of which is now in preparation. Ammon's work is a utilization in political, social and economic problems of the doctrine of heredity, natural selection, the relative frequency of different grades of human ability, social stratification, and social capillarity. The effort is made to bring the separate results of researches in biology, anthropology, economics, and statistics into a unified treatise which, without sacrificing thoroughness, shall be readily intelligible to the reader without technical training in these fields of investigation.—Translator's note.]

of weak intellect, of stupidity, and of imbecility. So, again, we recognize a similar gradation in point of industry, power of application, concentration, etc. — from the extraordinary absorption of an Edison to the inability for any serious work characteristic of tramps and vagrants, there exists a multitude of gradations.

The great number of differentiated traits and the multitude of grades in which any trait may occur, obviously allow of an almost infinite number of combinations. Hence is to be explained the variety of human individuals, and the fact that among all the millions of men there are never to be found two completely similar in mind and character. It is to be remembered that in consequence of the laws of heredity, and particularly of amphimixis, new combinations appear in the different children of the same parents, as well as in children of different families, and that there is thus offered an almost inexhaustible choice of types as the raw material for natural selection. To explain this in very general terms: the son of an intelligent but lazy father, for example, and of a mother of poor intelligence but of perseverance and will power, may combine in himself the better qualities of both parents; another son of the same parents may inherit the weakness of both without their distinctive merits; so also in the other children the parental traits may appear in various combinations — the traits of the different children thus varying qualitatively and quantitatively.

The doctrine of combinations, or the doctrine of probability, — a branch of pure mathematics — explains the law which prevails, amidst apparent chaos, in the greater or less frequency of the appearance of the particular combinations of the intellectual traits.

In order to understand this most easily, we must concentrate our attention. We must not introduce at first the great number of separate elements, but must classify these under certain groups and grades; the simple results that we shall thus reach can then be extended to cover the more complicated conditions that exist in reality. For reasons that will be presently understood, we take, in the first place, three groups of mental traits which are largely decisive of the place which a man will occupy in life.

1. Intellectual traits; among which I include all that belong to the rational side of man — power of quick comprehension, memory, power of judgment, power of invention, and whatever else belongs in this field.

2. Moral traits; namely, self control, will power, industry, persever-

ance, moderation, reliability, regard for family obligations (*Familiensinn*), honesty, and the like.

3. Economic traits; such as business ability, organizing talent, technical skill, caution, clever calculation, foresight, thrift, and so forth.

In criticism of this division, it has been urged[1] that the economic traits should not constitute a separate group but are only combinations of mental and moral characteristics. Of this, however, I am not wholly convinced, and therefore I retain for the time being the above division, which has the advantage of completeness.

The altruistic traits; such as love of one's neighbor, unselfishness, helpfulness, readiness for self-sacrifice, etc., form a special branch of the moral traits. They are to be left out of view for the present, because their effect on the success of the individual is open to question. In so far as an altruistic disposition engenders for its possessor the respect and regard that are essential for the successful occupancy of the highest positions, an altruistic character may well be advantageous to the individual. In the middle or lower positions of life, however, a high degree of altruism is usually rather a hinderance than a help to the person possessing it. For the sake of simplicity, therefore, we exclude this group of traits for the present, to return to it later.

To the above three groups of mental traits must be added a fourth group devoted to physical characteristics. Health and strength alone cannot accomplish much in modern life, but they are indispensable for the full utilization of mental gifts.

4. Bodily traits: power to work, endurance, power of undergoing exertions and of resisting excitements of every kind, vigor, good health, etc.

Thus far we have drawn qualitative distinctions. Now as concerns the quantitative relations of these particular groups, we may designate the highest grade that may be attained in each group by the figure 6, the lowest grade by the figure 1, and the intermediate grades by the figures 5, 4, 3, and 2. We have, then, in the case of each of the four groups of traits six different grades, and we will now see what combinations can be formed therewith, and which of these combinations will appear the most frequently.

[1] [For example by Dr. JULIUS WOLF in *Jahrbücher für Nationalökonomie und Statistik*, vol. x (July 1895).—TRANSLATOR'S NOTE.]

II.

A FEW ELEMENTS OF THE DOCTRINE OF COMBINATIONS.

Aside from Darwinism, nothing is perhaps more uncongenial to the products of our philological and "juristic" education, than a mathematical formula. As this book is intended for the use of any person of general education, and as I could not conscientiously omit the theory of natural selection, I will at least abstain from mathematical formulæ while I clothe in as attractive a picture as possible the necessary elements of the doctrine of combinations.

Let not the reader be offended if we start with a very humble parable, and one indeed which may seem to have a slight tinge of sinister connotation. Let us take four dice, the six faces of each die being marked with spots from 1 up to 6. Let the first die represent the mental traits, and its six surfaces stand, according to their spots, for the six grades 1 to 6 in which we have supposed these traits to occur. The surfaces of the second die signify likewise the moral traits in their different grades of strength; the other two dice stand similarly for the economic and the bodily traits necessary to the success of the individual. We can now, by throwing the dice, get some hints as to the relative frequency of the possible combinations of the different traits in their different grades.

In general there are with four dice ($6\times6\times6\times6$) 1296 different throws possible. That is, each die can show any one of its six sides while the three remaining dice remain unchanged.

The highest possible throw is that in which the sum of the spots is equal to 24, and this can occur only in a single way, namely, that every die shows six spots. In our parable this suggests that among 1296 individuals will be found only a single one in whom the mental, moral, economic, and bodily traits all attain the highest grade.

If descending a little in the scale of perfection, we assume that one of the four groups of traits attains only the next inferior grade, the grade, namely, expressed by 5, we have four possible combinations, or, in other words, four individuals, represented by the throws 6, 6, 6, 5,—6, 6, 5, 6—6, 5, 6, 6—and 5, 6, 6, 6. Such men whose capacities are represented by the sum of 23 spots, are then four times as numerous as the number-one-men who correspond to the sum of 24 spots.

The next rank is that which is expressed by the sum of 22 spots. This sum can occur through two kinds of combinations; it occurs

either when two groups of traits are expressed by 6 and two others by 5, or when three groups are expressed by 6 and the remaining one by 4. We have then the possibilities 6, 6, 5, 5—6, 5, 5, 6—6, 5, 6, 5—5, 5, 6, 6—5, 6, 6, 5—5, 6, 5, 6—making 6 throws, and in addition, 6, 6, 6, 4—6, 6, 4, 6—6, 4, 6, 6—4, 6, 6, 6—these last four making in all 10 throws, each of which gives the sum of 22 spots.

The sum of 21 is attainable through four kinds of combinations by 20 different throws: the sum of 20 is attainable through five kinds of combinations by 35 throws; and so on, with every decrease in the sum of the spots, the kinds of combinations and the number of possible throws increases. This holds as far as the average or middle sum of 14 spots which can be attained in 12 different ways with 146 different throws. Then the frequency decreases exactly in the inverse order that it has been increasing, so that, for example, the sum of 6 spots is attainable by any one of 10 throws, the sum of 5, by 4 throws, and the least sum, that of 4 spots, by only one throw.[1] This last throw show-

[1] It is hardly necessary to give in detail the possible throws through which each sum may be attained. By way of example, it may be shown here how the sum of 14 spots is attainable through 12 different kinds of combinations in 146 different throws:

1.	Combination	4442	4424	4244	2444	....	....	= 4 throws
2.	"	4433	4343	4334	3434	3443	3344	" 6 "
3.	"	4451	4415	4541	4514	5154	4145	"
		5144	5441	5414	1544	1445	1454	" 12 "
4.	"	4532	4523	4352	4325	4253	4235	
		5432	5423	5342	5324	5243	5234	
		3245	3254	3452	3425	3542	3524	" 24 "
		2345	2354	2435	2453	2543	2534	
5.	"	5531	5513	5351	5315	5153	5135	" 12 "
		3155	3551	3515	1355	1553	1535	
6.	"	5522	5252	5225	2525	2552	2255	" 6 "
7.	"	5333	3533	3353	3335	....	....	" 4 "
8.	"	6233	6332	6323	2633	2363	2336	" 12 "
		3362	3326	3632	3623	3263	3236	
9.	"	6431	6413	6341	0314	6143	6134	
		4631	4613	4361	4316	4163	4136	
		3641	3614	3461	3416	3164	3146	" 24 "
		1643	1634	1463	1436	1364	1346	
10.	"	6422	6224	6242	4622	4226	4262	" 12 "
		2264	2246	2624	2642	2642	2462	
11.	"	6521	6512	6251	6215	6152	6125	
		5621	5612	2651	2615	1652	1625	
		2651	2615	2561	2516	2156	2165	" 24 "
		1652	1625	1562	1526	1256	1265	
12.	"	6611	6161	6116	1616	1661	1166	" 6 "

ing 1 spot on each of the four dice, signifies in our comparison a man exceptionally poor in all four groups of traits, weak-winded and sickly.

The following table presents a summary of these results:

Among 1296 possible throws

The sum of	24	spots	will appear	once.	
"	23	"	"	2	times.
"	22	"	"	10	"
"	21	"	"	20	"
"	20	"	"	35	"
"	19	"	"	56	"
"	18	"	"	80	"
"	17	"	"	104	"
"	16	"	"	125	"
"	15	"	"	140	"
"	14	"	"	146	"
"	13	"	"	140	"
"	12	"	"	125	"
"	11	"	"	104	"
"	10	"	"	80	"
"	9	"	"	56	"
"	8	"	"	35	"
"	7	"	"	20	"
"	6	"	"	10	"
"	5	"	"	4	"
"	4	"	"	once.	

This table signifies: If we make with four dice 1296 throws, every one of the possible sums from 24 spots down to 4 will, theoretically, appear with the designated frequency; for example, the sum 18, 80 times; the sum 9, 56 times, etc. In reality, of course, these results will only *tend* to occur; in any single trial chance variations will appear. But the more often the experiment is repeated, so much the more will these variations be neutralized; and if we take the average from a great number of trials, the results will approximate more and more closely to the theoretical probability.

It will have impressed the reader already that the number of the extremely high throws, as also that of the extremely low ones, is comparatively small, while the average or nearly average throws appear very frequently. Directed toward our present subject this signifies that the number of men of genius and high talent is relatively small, because in accordance with mathematical laws the necessary combina-

tion of traits can appear but seldom. Correspondingly, the number of the weak-minded and of the imbecile is relatively small, while the number of those of about average ability is far in excess of that of the two extremes.

This analogy of the dice is useful, not only because it simplifies the general subject, but also because it suggests the explanation for the peculiar fact that so many otherwise good observers err in regard to what constitutes mediocrity and thus overrate the average capacity of the masses. Let us, for example, take as representative of mediocrity the sum of 14 spots. This sum can occur, as shown above, in not less than 146 different throws. Among these throws are such combinations as 4, 4, 3, 3—4, 3, 4, 3—4, 3, 3, 4—3, 4, 3, 4—3, 4, 4, 3—3, 3, 4, 4—but there are also a very different class of combination, such as 6, 6, 1, 1—6, 1, 6, 1—6, 1, 1, 6—1, 6, 1, 6—1, 6, 6, 1—1, 1, 6, 6—which equally give the sum of 14. In our comparison the combinations of the first group stand for individuals of fair "all-round" abilities, capable in all respects of filling a modest but useful place; the other group, however, represents the persons of unbalanced, inharmonious gifts, who, in spite of some brilliant qualities, cannot successfully meet the tests of life. Sometimes, for example, these last possess high intelligence and moral traits but lack economic characteristics and physical stamina. So, again, they may possess the traits of any two of these four groups in the degree of excellence indicated by 6, but be handicapped by the weakness denoted by 1 in respect to the traits of the other two groups.

While the limitations of the first of the above classes—men of moderate but well-balanced endowments—are in general obvious, the members of the second class give under certain conditions the impression of men of great potential ability, who simply have not been able to get a start or to force themselves ahead. They are regarded as "men of unrecognized worth" or even as "suppressed geniuses." Hence the responsibility for their failure is laid upon insufficient education, unfavorable circumstances, or, preferably, "the prevailing social organization," whereas the real difficulty is in the weak sides of the individual's own constitution.

Further, it is to be noted that in our example of the dice, down to the sum of 9 spots some *one* group of traits can be present in the highest grade denoted by 6, in which case the three others must be represented each by the figure 1. Two 5's can appear down to the sum of 12 spots, and one 5 down to the sum of 8. But, as may be seen by

working out the calculation, the lower sums are usually composed of the figures denoting the average or lower grades, 4, 4, 4, 4—3, 3, 3, 3—2, 2, 2, 2—or of combinations of these figures, such as 4, 3, 2, 1. This means that out of the general mass of the moderately or somewhat poorly endowed there are to be distinguished a considerable number conspicuous for some *one* highly developed trait, which may, for example, be a keen "mother wit," great steadfastness in adversity, or an excellent knowledge of business, according as the 6 spots have been thrown with the die standing for the intellectual, the moral, or the economic traits. Such persons give the impression that the organization of society has done them grievous wrong in assigning them so low a rank in life as they often occupy. To see the error involved in this judgment, it is necessary to consider their personalities as a whole. If, for example, the 6 is thrown with the die representing the group of physical traits, we have a man who is a Hercules in bodily strength, but who, because of his slight mental endowment, is available only for exhibition at side shows and country fairs.

Now let us introduce, along with the above egoistic moral traits, the altruistic characteristics, which we have so far eliminated. We can easily understand that these unselfish traits may be strongly developed in many individuals who are otherwise of poor or only average endowments. From this combination there arises a strong inner pressure to relieve misery in the world, without, however, the presence of the right judgment or ability for such efforts. Hence it is that wholly visionary plans of social betterment find such ready favor, and that sometimes great philanthropic undertakings come to grief or are saved only by the control being turned over to persons more egoistic, perhaps, than the originators, but of greater practical ability. Similarly, it is easy to understand that the organizers of industry, indispensable as they are for social progress, are most often not as exceptionally endowed in altruistic traits as in other respects. Many "captains of industry" are, it is true, thus endowed, because in their class all grades of altruism are represented, but it can only happen through chance that the fittest should also be the most self-sacrificing. Moreover, many business men achieve success not so much through any talent for organization as through shrewdness and close economy. These latter, of course, cannot be depended on for altruistic efforts, and it is obvious that a public concern for the welfare of the laborers is necessary to supplement the efforts of the best-disposed employers and to bring their competitors

up to the same standard. Great statesmen must under all conditions possess a strong spirit of altruism. They can fulfill their duties only when they enter completely into the interests of their people.

In general it is the case that the higher we go the more harmonious is the endowment. The number one and the number two men have not only great abilities but a many sided well-balanced and complete mental equipment. But it is a law of nature that such men appear only sparingly, and society deserves no reproach if it bars the way for the "incapable worthy" and the "unrecognized genius;" for only personalities especially endowed in everyone of the principal groups of traits can be utilized in important posts with safety to the highest human interests.

III.

UTILIZATION AFTER GALTON OF THE DOCTRINE OF COMBINATIONS IN REFERENCE TO MENTAL TRAITS.

Up to this point we have regarded the throwing of the dice as simply a comparison or analogy; but in all probability it is much more than this, namely, an essentially true representation of the phenomena which actually occur before and in connection with fecundation. The separation of the determinants, that is of the groups of determinants,[1] in the reducing division,[2] and the union of the two parental germ plasms[3], must almost certainly conform to the laws of combination. The determinants which represent in the germ plasm the different traits of the future individual, and which correspond, according to the number and organic connection of their molecules, to the strength that these traits will attain — these determinants will unite and form new combinations in the same way as the dice produce manifold combinations with their spots. If this is the case, our analogy becomes a reality.

We must now consider what modifications must be introduced before the results already reached can be fully applied to the subject of the frequency of different grades of ability among men.

We provisionally divided the mental traits favorable to the success of the individual into three groups and added thereto a fourth group of bodily traits. We later introduced the altruistic traits which are

[1] A. WEISMANN, *The Germ Plasm*, New York, 1893, p. 62.

[2] *Ibid.*, chap. viii.

[3] *Ibid.*, chap. ix.

beneficial to society but not always advantageous to the individual himself. This classification was provisionally allowable for the sake of simplicity. In reality, however, it is evident that each of the above groups consists of traits or combinations of traits which are not necessarily associated together. One may, for example, possess a few intellectual, moral, or economic traits in much higher grade than other traits of the same group; again, full bodily vigor is the result of a great number of excellencies in different parts of the body. Instead of simply combining four elements, we should then, to conform to reality, have utilized a much greater number. In what ways would the results have thus been affected?

The greater we conceive the number of transmissible traits, the less frequently will the individuals appear in whom all or nearly all of these traits combine; the more rare, in other words, will be the individuals of genius and high talent. If, instead of four dice we take eight, we shall have a pre-eminent man no longer among 1296 individuals but among $6\times6\times6\times6\times6\times6\times6\times6 = 1{,}679{,}616$ individuals. The very poorly endowed become correspondingly rare and the proportion of mediocrity becomes more overwhelming. Any increase in the number of grades in which each trait may occur — represented above by the number of spots on the dice — works in the same direction. Under our provisional assumption, the most brilliant man was only six times the superior of the most stupid. If we put the ability of the former as twelve times that of the latter; if, in other words, we choose instead of the cubes with six surfaces, dodecahedrons, the twelve planes of which are marked with from one to twelve spots, — the number of possible throws with four such dice is $12\times12\times12\times12 = 20{,}736$, and we have then a pre-eminent man among 20,736, instead of as before among 1296 individuals. With eight such twelve-sided dice the number of individuals among whom would occur one pre-eminent man would reach not less than 429,981,696.

A third factor operates in the same direction. There is an equal probability that a die will fall with any one of its sides uppermost. Our example has then implied that the several grades of any trait will appear with equal frequency. But in reality the high and the low grades of a mental trait, as the expression of the cells or molecules of the brain substance, occur more seldom than the middle grades. In other words, the strength of each particular trait follows the same law that governs the combination of the different traits. This circumstance

also lessens the number of exceptional personalities which are found in a certain number of individuals and increases the number of the mediocre.

The total result of the laws here prevailing may be embodied in a simple formula,[1] which expresses in general the frequency of variations from a mean, and which can be utilized for our purposes, provided the coefficients are determined empirically. The number of the individual traits can then be left out of consideration, which is much to be desired since their number cannot be determined; it is perhaps as great as the number of cells or even of molecules of which the brain is composed, since any one of these elements may vary independently. With the aid of this formula, it is also unnecessary to determine the number of the different grades of each trait and the frequency of these several grades.[2]

[1] The formula is $y = Ye^{-h^2x^2}$. Galton ascribed it to the Belgian astronomer and statistician, Quételet. The prior utilization of the formula, however, for the doctrine of combinations and the calculation of probabilities is to be credited to Gauss, and appeared in the "Theoria de Combinationis Observationum Erroribus Obnoxiae" published in the *Commentationes Societatis Regiae Scientiarum Gottingensis*, 1823.

[See also: A. QUÉTELET, *Lettres . . . . sur la théorie des probabilités, appliquée aux sciences morales et politiques*, Bruxelles, 1846, English translation by Downes London, 1849; F. GALTON, *Hereditary Genius*, London, 1869; *Natural Inheritance* London, 1889; JOHN FISKE, "Sociology and Hero Worship," *Atlantic Monthly*, January 1881; O. AMMON, *Der Abänderungsspielraum: ein Beitrag zur Theorie der natürlichen Auslese*, Berlin, 1896; E. T. BREWSTER, "A Measure of Variability, and the Relation of Individual Variations to Specific Differences," *Contributions from the Zoölogical Laboratory . . . . at Harvard College . . . .* No. LXXIX, 1897; and the following, cited among others by Brewster: A. WEISBACH, *Körpermessungen verschiedener Menschenrassen*, Berlin, 1878. L. STIEDA, "Über die Anwendung der Wahrscheinlichkeitsrechnung in der anthropologischen Statistik," *Archiv für Anthropologie* Band xiv. pp. 167–182, 1882.—TRANSLATOR'S NOTE.]

[2] In the formula x signifies the degree of variation from the mean, y the relative frequency of the appearance of this variation (that is its "probability"), Y the frequency of the mean, e the basis of the hyperbolic logarithms, h the so-called coefficient of precision which determines whether the frequency of occurrence shall diminish more or less rapidly with the increasing degree of variation from the mean. The quantity e is a constant, fixed once and for all; Y and h are constants which may be altered according as the formula is differently utilized. It will be seen from this formula that the frequency of occurrence y must decrease very rapidly with the increase of x, the degree of variation from the mean. This will appear more clearly if the formula be written thus $y = \frac{Y}{e^{h^2x^2}}$. Any increase in x will obviously rapidly increase the denominator and lessen the value of y.—AMMON, *Der Abänderungsspielraum*, p. 5.

Francis Galton has empirically determined the coefficients in accordance with data drawn from English sources, and we borrow from him the figures which he has calculated for the division of a million men into each grade or degree of ability.

The division into sixteen classes, chosen by Galton, is an arbitrary one, for the transitions are really continuous and might be grouped into more or fewer classes.[1] But his practical insight led him to accept a division which gave a broadly correct view.[2]

The classes are designated by letters, the classes above the mean by capitals and those below by the corresponding small letters. Because of the symmetry of the formula the number of persons assigned to the class designated by each capital is the same as the number assigned to the corresponding small letter.

Class A and class a signify ability of about the average grade, respectively slightly above and slightly below the mean. Class B is a somewhat higher, and class b a somewhat lower degree of ability. These four taken together constitute the great mass of mediocrity. Classes C and D embrace already personalities of considerable and marked ability. Members of class E are talented in the ordinary

[1] "The number of grades into which we may divide ability is purely a matter of option. We may consult our convenience by sorting Englishmen into a few large classes, or into many small ones. I will select a system of classification which shall be easily comparable with the number of eminent men, as determined in the previous chapter. We have seen that 250 men per million become eminent; accordingly I have so contrived the classes in the table that the two highest, F and G, together with X (which includes all cases beyond G, and which are unclassed), shall amount to about that number — namely 248 per million."—GALTON, *Hereditary Genius*, chap. iii.

[2] [Galton's results are, it is true, based on an assumption which he does not, perhaps, fully justify, and which he very probably makes in a somewhat too unqualified sense. This assumption is that men of natural genius and high talent (combined with the necessary health, power of labor and perseverance) will in general reach fame or distinction, whatever may be the obstacles from lack of education and social advantages etc.; in other words, that the number of famous, eminent, and distinguished men is a correct measure of the number of men of natural genius, high talent, and ability. This assumption has been naturally much disputed. Professor William James has questioned whether "genius [of certain kinds] will out" quite so inevitably as Galton supposes (*Atlantic Monthly*, October 1880). D. G. Ritchie and (more elaborately) C. H. Cooley have advanced similar criticisms (*Darwinism and Politics*, Sec. 6 and *Annals of the American Academy of Political and Social Science*, May 1897. What Ammon says in this article in regard to inharmonious endowment helps to clear up some of the points in this controversy. I am gathering statistics which I hope will throw light on some of the other questions involved.—TRANSLATOR'S NOTE.]

sense; those of classes F and G are eminently and pre-eminently talented. Grade X, embracing everything above G, corresponds to true genius. In the other direction the classes c, d, e, f, g, and x descend through various degrees of stupidity to imbecility and complete idiocy.

The distribution of a million men among the various classes is according to Galton, the following:

Class X	1	individual
G	14	individuals
F	233	"
E	2,423	"
D	15,696	"
C	63,563	"
B	161,279	"
A	256,791	"
a	256,791	"
b	161,279	"
c	63,563	"
d	15,696	"
e	2,423	"
f	233	"
g	14	"
x	1	individual

This table is brought nearer to view if we embody the results in a curve such as is given in Fig. 1.

The heavy line is the curve according to Galton's figures, the horizontal transverse lines indicating the sixteen classes of ability. It will be seen at a glance that the average classes A and a contain alone more than one half, and in connection with the classes B and b even five sixths, of the million men; and that the highest grades of ability are drawn out to a fine point. In reality, however, the curve forms here no point, but approaches the vertical line asymptotically, but so closely that already with the class F the two arms of the curve appear to merge with the middle line and with each other. The same holds true of the lower arms of the curve.

Like a lonely mountain peak, or rather, like the spire of a cathedral, rise the men of high talent and of genius above the broad mass of mediocrity. If now we understand that the number of the highly gifted is at all events so small, we may recur to a point previously raised, and see more easily that it is impossible that "many" such can

have been kept back in the lower classes through the incompleteness of social institutions. We recollect, also, that the groups of mediocrity are characterized by association of dissimilar elements, both in general and in particular; in general, because in the same class very different combinations are placed together as of like value; in particular, because

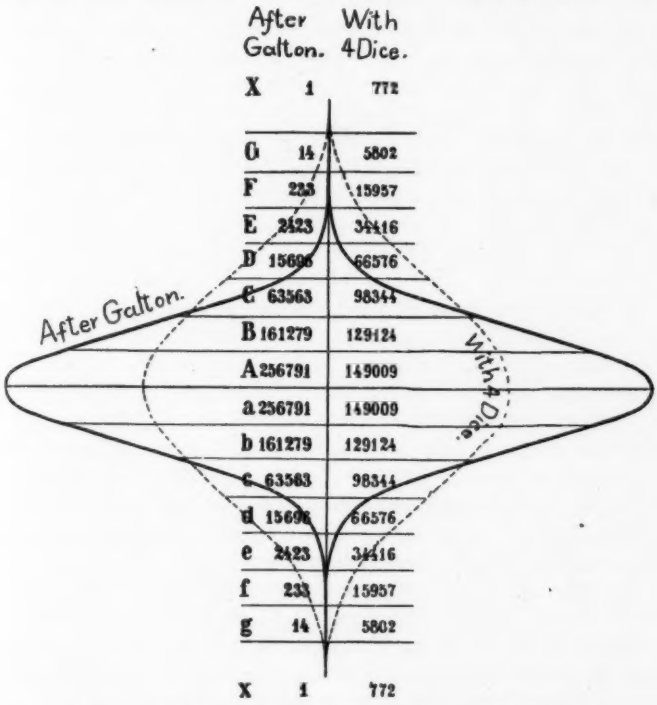

FIG. 1. Graphic representation of the frequency of different grades of Human Ability.

with some brilliant qualities in the individual are associated others which make them ineffective.

The curve runs out to a point below just as it does above, as the number of the poorly gifted, the incapable, and the wholly imbecile decreases in a symmetrical manner.

By means of a dotted line, I have indicated in Fig. 1 a curve

corresponding to our former example of the four dice, after I had adapted the calculation to Galton's sixteen classes. It will be seen that in this curve the same law finds expression, but in a weaker manner. The mediocre groups are not so exclusively predominant, the more exceptional individuals are more numerous, whence the attenuation of the curve is less extreme, although similar in principle. In the classes Aa and Bb there are 279,874 individuals less than according to Galton's calculation, and accordingly 139,937 more in the higher classes and an equal excess in the lower classes.[1] This more slender form of the curve corresponds with the combination of only a few elements or traits; the more elements co-operate the more traits must meet in a genius, the broader is the curve in the center, and the more tapering is its attenuation both above and below.

The individuals of Galton's class c and below are so poorly endowed that they can only with difficulty and in an incomplete way take part in the life of society. In this category belong not only those who are not able to accomplish work which requires intelligence and skill, but also those of insufficient moral character, those who, as the Scotch say, "have taken a skunner" to work, the tramps, vagrants, etc., who could perhaps work if they only so willed, but who have not the stamina to will. Here begins the proletariat, in which body two classes are to be distinguished, namely, the partly useful, and the wholly useless or even dangerous.

In the last named class fall those individuals who are in the lowest stages of intellectual, moral, economic, and physical equipment, such as idiots, feeble-minded, criminals, drunkards, paupers, invalids, etc., who are kept, or rather nursed, in appropriate institutions. Their number reckoned by the million inhabitants would extend from class x upward through class e and somewhat beyond that class. The number embraced in these classes, 2671, if somewhat too small, would be too much increased by the addition of the 15,696 of class d. We must

[1] The correspondence between the number of the upper and the lower grades is worthy of further discussion. I have more recently undertaken inquiries as to whether the symmetry of the upper and the lower arms of the curve is, as Galton assumed without further argument, a necessary consequence of the law under all conditions. The result was that exceptions occur. The traits connected with propagation and nurture yield asymmetric curves, all remaining traits do so, however, only so long as they are in a state of progressive or retrogressive evolution. In the stable stage, all traits (with the exception of those connected with propagation and nurture) are necessarily expressed through symmetrical curves.

assume then that the limit of social utilization cuts through class d, so that part of this class is above and part below the limit. Taking this into account we obtain in Fig. 2 the true form of what is incorrectly called the "social pyramid."

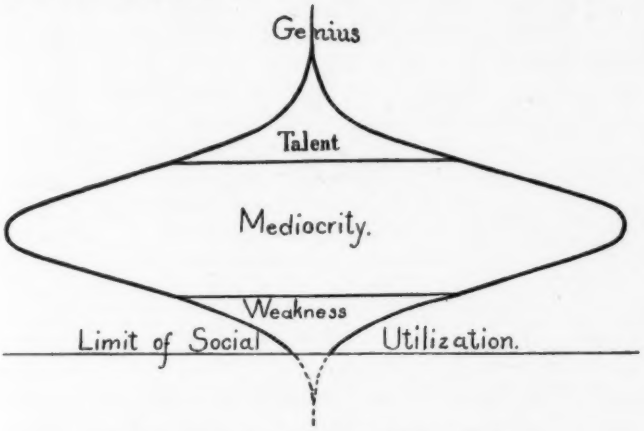

FIG. 2. True form of the so-called Social Pyramid.

The form of this curve is not that of a pyramid, but is rather that, to use a humble comparison, of a somewhat flat onion or turnip. Classes A a and B b contain the great mass of mediocrity, class c and the upper part of d represent a group of slight, if any, social utility, the casual and irregular workers and the occasional as distinguished from the regular inmates of penitentiaries, workhouses, labor colonies, and hospitals.[1]

[1] [In the judgment of some excellent observers this whole group of casual laborers is not only of no social utility, but is of distinct disadvantage to society. According to Charles Booth the slight amount of work done by this class could be better done by the next highest classes (say by our classes b and a) with advantage to them and society as a whole. Booth even proposes that the casual labor class be taken under governmental control and thus eliminated from the field of free industry. *Labor and Life of the People*, vol. i., London, 1889. Now this casual labor class of Booth corresponds, as I shall show in the next section, very closely to Galton's class c. We ought, then, from this point of view, to draw the lower limit of positive social usefulness along the line between class b and class c. The line as drawn in Ammon's figure might then be called "the limit of social tolerance," that is, the limit below which society finds it inadvisable to tolerate the free activity of the individuals concerned. Making the above changes we obtain the results indicated in Fig. 2a.

In the above figure I have added a dotted line to indicate in a general way the

The intelligent, skilled, and steady workmen belong for the most part to the great classes of mediocrity. According to their trade, position, and skill, they fall in individual cases either above or below the average of ability. It is to be noted that our classes of mediocrity, or of average ability, are by no means the same as what are usually called the "middle classes." The "middle classes" in the conventional sense,

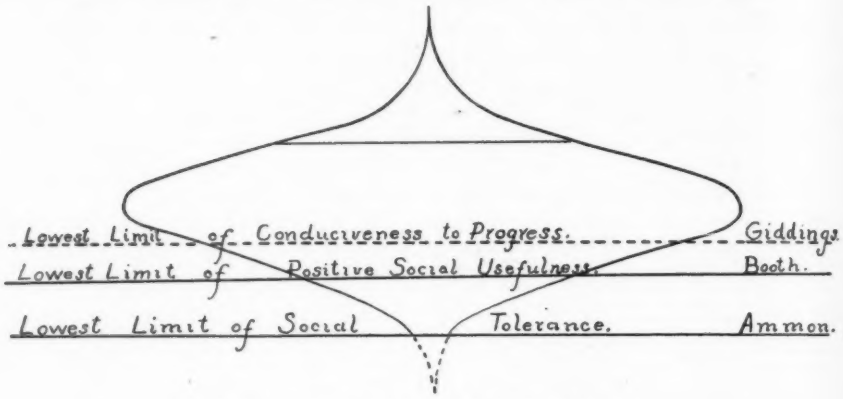
Lowest Limit of Conduciveness to Progress. Giddings
Lowest Limit of Positive Social Usefulness. Booth.
Lowest Limit of Social Tolerance. Ammon.

FIG. 2a. The lowest limit of Social Availability.

contain rather the talented personalities of class C and above, and hence it is that they can form only a minority numerically, while if minds could be appraised instead of being counted, they would be found to represent a high proportion of the intellectual and moral energy of society. The persons of classes F and G are found mostly in very high

location in the ability curve of what may be called the lowest limit of conduciveness to social progress. Professor F. H. Giddings has argued in his brilliant paper on the "Ethics of Social Progress" (*Philanthropy and Social Progress*, Boston, 1893, pp. 226 ff.) that the large class of "laborers that have no adaptiveness, that bring no new ideas to their work, that have no suspicion of the next best thing to turn to in an emergency"—although they are, under stable conditions, self-supporting, are a drag on social advance. If they were absent from the community their work could be better done by machinery in the hands of their abler fellows. It may be assumed that the class he has in mind rank about as high as Booth's category of intermittent laborers, or as Galton's class b. Upon this assumption I have located in the figure the lowest limit of conduciveness to progress. The views of Booth and Giddings illustrated in Fig. 2a are somewhat similar to those expressed by Ammon on pp. 192 *et seq.* of his *Gesellschaftsordnung*.—TRANSLATOR'S NOTE.]

positions of government, industry, law, medicine, science, art, and literature, and the very limited class X corresponds with the occasional man of true genius.

IV.

THE CORRESPONDENCE BETWEEN THE DISTRIBUTION OF ABILITY AND THE DISTRIBUTION OF COMFORT.[1]

It is interesting to determine how close is the correspondence between the curve of ability as above plotted, and the empirical curve representing the actual social and economic condition of the population of a representative community.

The most thorough and exact investigation ever made of the condition of a large population, is the study of the population of London conducted by, and under the direction of Charles Booth. He arrives at the following classification of the population of the whole city, outside of institutions :[2]

Lowest or semi-criminal class	37,610	or .9	per cent.
Casual laborers or very poor	316,838	" 7.5	"
Poor	938,293	" 22.3	"
Working class, comfortable	2,166,503	" 51.5	"
Middle class and above	749,930	" 17.8	"
	4,209,170		

In addition to the above there are 99,830 inmates of institutions. It is perhaps fair to assume that about half of these should be grouped with the semi-criminal or lowest class of the general population. In that case, that class would embrace about 2 per cent. of the total population.

If now we place these percentages in comparison with the percentage of different grades of ability according to Galton, we get at the first glance the following parallelism :

Booth — Condition Classes.		Galton — Ability Classes.	
Semi-criminal class, etc.	2.0 per cent.	1.8 per cent.	Classes x, g, f, e, and d
Casual laborers	7.5 "	6.4 "	Class c
Poor	22.3 "	16.0 "	Class b
Comfortable	51.5 "	52.4 "	Classes a and A
Middle class and above	17.8 "	16.0 "	Class B
		6.4 "	Class C
		1.8 "	Classes D, E, F, G, X

[1] This section is added by the translator.

[2] C. BOOTH, *Life and Labour of the People*, London, 1892, vol. ii. p. 21.

I now make certain probable assumptions that will find further justification in the next paragraph. It is probable that Booth's category, the "poor" includes in its upper layers some elements that belong under our class a rather than under our class b. It is clear that the more prosperous of those whom he classifies as comfortable correspond with our class B rather than with class A. Lastly, it is still more evident that many of his "middle class and above" belong with our class C, and above, rather than with B. To make his categories correspond with ours, a considerable number, say from 250,000 to 300,000, or about 7 per cent. of the total population may be transferred from the upper layers of the "poor" to the lower layers of the "comfortable;" about an equal number from the upper strata of the comfortable may be assigned to the higher mediocrity corresponding to our group B; lastly, at least that number of those whom he reckons among the "middle class and above" will rank with our class C. If these changes are made we get the following close correspondence between condition and probable ability:

Condition Classes			Ability Classes	
Semi-criminal class etc.	2.0 per cent.		1.8 per cent.	Classes d and below
Casual laborers	7.5 "		6.4 "	Class c
Poor	say 15.3 "		16.0 "	Class b
Comfortable	51.5 "		52.0 "	Class a and A
Well to do	say 17.8 "		16.0 "	Class B
Middle class and above	say 7	say 5.0 "	6.4 "	Class C
		say 2.0 "	1.8 "	Class D and above

A closer comparison is possible. For most parts of London Booth publishes a classification according to a somewhat more detailed scheme of categories. Adding his figures for east, central, south, and outlying London, and reducing the percentages we get the following results:[1]

Semi-criminal class[2]	2.0 per cent.	approximately
Casual laborers	10.9 "	"
Intermittent Earnings	10.1 "	"
Small Regular Earnings	13.7 "	"
Standard Regular Earnings	41.7 "	"
Superintendents, etc.	14.8 "	"
Lower middle class	5.5 "	"
Upper middle class	1.9 "	"

[1] *Life and Labour of the People*, vol. i. pp. 36 and 242–249.

[2] Allowing for part of the inmates of institutions as in the former table.

Bringing this table into relation with our ability classes, we obtain the following striking parallelism:

Semi-criminal class	2.0 per cent.		1.8 per cent.	Classes d and below
Casual laborers -	10.9 "		6.4 "	Class c
Intermittent Earnings	10.1 "		16.0 "	Class b[1]
Small Regular "	13.7	55.4	52.4 "	Classes a and A[1]
Standard " "	41.7			
Superintendents, etc.	14.8 "		16.0 "	Class B[1]
Lower middle class	5.5 "		6.4 "	Class C
Upper middle class	1.9 "		1.8 "	Classes D and above

The correspondence is here most extraordinary. The only serious departure of Booth's results from the Galtonian curve is as regards the percentage classed respectively in the two groups, "small regular earnings" and "standard regular earnings." It is clearly an arbitrary or optional matter just where the line shall be drawn between "small" and "standard." Mr. Booth drew the line at 21 shillings per week. If he had drawn it a little higher, perhaps at 23 or 25 shillings, the two groups would have been as symmetrical as are classes a and A in our table. The other deviation from the curve may be explained in the same way. Under the head of "casual laborers" are a considerable number who would be classed under "intermittent," if the line between these groups were drawn at two days' labor per week instead of at three days. But in any case, the correspondence is already so striking that there is hardly need of these refinements.

Are these parallelisms merely the result of a whimsical coincidence? To me it seems rather that they at least suggest two probable conclusions, (1) that Galton's calculation of the distribution of different grades of ability is essentially correct for such a representative community as that of London, and (2) that there is a fairly close correspondence between the distribution of ability and the distribution of comfort.

The different grades into which Galton divided ability are supposed to be separated by equal intervals. On the other hand, Booth's categories are rather matters of judgment, and the intervals between them are not necessarily uniform. It appears, however, from the results, that in the longer (which was, by the way, the original) list of categories, Booth must have made, perhaps unconsciously, a division which (with

[1] Mediocrity.

the exceptions we have indicated in a preceding paragraph) gives an approximately constant interval between the various grades. At all events, we have now to turn to a somewhat similar scale of human well-being which has for our purpose the advantage of a relation between the categories as exact and definite quantitatively as is the case with the ability scale with which it is to be compared.

V.

INCOME STATISTICS IN RELATION TO THE DISTRIBUTION OF ABILITY.

The income statistics most available for our present study are those of the kingdom of Saxony, the most highly developed of the German states from an industrial point of view. The official statistics for 1890 show that an income of

	500 marks	was received by	546,138	persons	or	38.9	per cent.
500 to 800	"	"	"	401,439	"	"	28.6	"
800 to 1600	"	"	"	318,125	"	"	22.7	"
1600 to 3300	"	"	"	91,124	"	"	6.5	"
3300 to 9600	"	"	"	36,841	"	"	2.6	"
over 9600	"	"	"	19,402	"	"	0.7	"
				1,413,069			100.0	per cent.

In order to understand the significance of these figures it is best to embody them in a curve. As preliminary to this we must consider (1) that the intervals of income are unequal and hence must be represented by correspondingly unequal intervals on the vertical line, and (2) that the percentages of persons included in each interval must be modified according to the greatness of the interval.

To consider these points a moment:

1. The intervals are (500−0=) 500 M., (800−500=) 300 M., (1600−800=) 800 M., (3300−1600=) 1700 M., (9600−3300=) 6300 M. Corresponding to these unequal intervals, the abscissæ are marked off upon the vertical axis in Fig. 3.

2. It is clear that, other things being equal, more taxpayers must fall in a large interval than in a small interval of income. We must not take for the ordinates of our curve simply the above percentages, because to do so would give a false indication of a great number of high incomes. We must first calculate how many persons fall within

the *equal* interval corresponding to each hundred marks. This calculation, which is as follows, will give the true ordinates:

up to 500 M.,	38.9 per cent.	÷ 5	= 7.8
500 to 800 M.,	28.6 "	÷ 3	= 9.5
800 to 1600 M.,	22.7 "	÷ 8	= 2.8
1600 to 3300 M.,	6.5 "	÷ 17	= 0.4
3300 to 9600 M.,	2.6 "	÷ 63	= 0.04

The ordinate for the last interval, namely that of all above 9600 M., cannot be calculated, since there is no upper limit to mark the extent of the interval; but this difficulty is of no consequence for our purpose, since even the two preceding ordinates, 0.04 and 0.4, are too small to

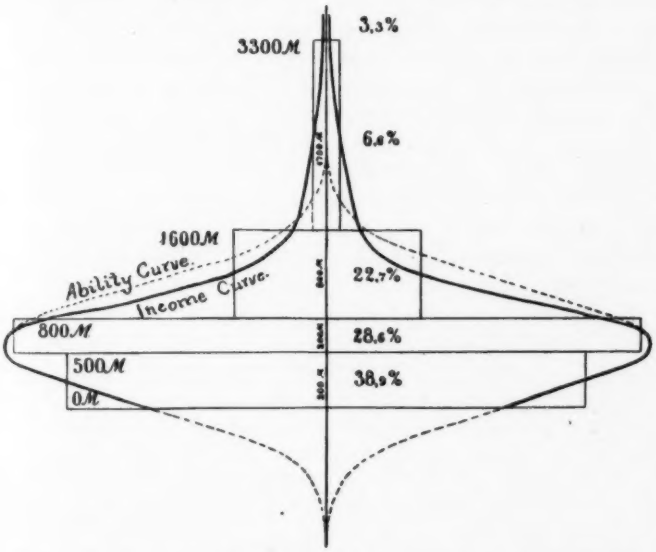

FIG. 3. Graphic representation of the distribution of income in the Kingdom of Saxony (1890).

be graphically represented. In the case of the remaining intervals the ordinates, as above calculated, are marked off horizontally. If now we draw a free curve rounding off the square corners, since in reality the incomes increase gradually and not in broad steps or stages, we get the graphic representation shown in Fig. 3.

The curves of income for Prussia, Baden and other states, as the statistics are summarized in Robert Meyer's article on Income Statistics,[1] would take a similar form, but the comparison is difficult, because the methods of estimating income and the practice as regards division into different classes is so varied. For Prussia, Soetbeer has extended the second lowest class from 525 M. to 2000 M. so that the characteristic bulging of the curve sidewise is obscured.[2] A curve of incomes for Baden would have to remain incomplete because the number of tax-free citizens with incomes of less than 500 M. has not been recorded. The statistics of Saxony are not only the most complete, but, because of the strongly marked industrial character of the country, the most interesting for our present purpose. To these statistics we will therefore confine our attention.

Two truths will at once appear upon an examination of Fig. 3: (1) that the form of the curve of incomes (except at the base) very nearly coincides with Galton's curve of the distribution of ability; and (2) that the income curve is not symmetrical above and below but corresponds more nearly to what we have called the "true form of the social pyramid" (see Fig. 2), which like the income curve, stands upon a horizontal base line.[3] For the clearer demonstration of these correspondences, I have by the dotted line in Fig. 3, shown the contour of Galton's curve.

The first truth contains nothing of the unexpected. The curve of

[1] *Handwörterbuch der Staatswissenschaften*, 1890 *et. seq., ann.*

[2] [That Ammon is correct in assuming that the "bulging" is really present in the distribution of incomes in Prussia is indicated by the statistics given in COHN'S *Science of Finance* (VEBLEN'S translation, Chicago, 1895) §§ 319–320. Under the law prevailing up to 1883, the rate of taxation varied according to twelve categories of incomes. The number of persons embraced in the lowest two grades 420–900 M. was 3,742,000 or 75 per cent. of those taxed; the number included in the next two categories was 619,000 or only about 12 per cent. of the total number taxed. I regret that being at present remote from any large library I cannot easily obtain the figures for all twelve categories. But the figures just given are almost enough to prove that the distribution of incomes in Prussia conforms to a similar curve of probability.— TRANSLATOR'S NOTE.]

[3] [If the reader will turn back to Fig. 2a (footnote, p. 220), it will be seen that the base line of the income curve exactly coincides with the base line (or lowest limit) of positive social usefulness as fixed by Charles Booth. Of course as the data are based on different population groups and different methods of classification, too much weight should not be placed on the exact coincidence. But the general correspondence in the results is at least significant.— TRANSLATOR'S NOTE].

Galton rests upon Gauss's formula of probability which holds for all conditions in which single cases vary from a mean and grow less frequent the greater the extent of the variation. Now these conditions hold good in general with reference to incomes as with reference to abilities, and there is therefore nothing mysterious in the close similarity of the curves.

The slight differences that do appear between the ability curve and the income curve are due partly to the method in accordance with which the income statistics are gathered. The income curve is in the case of the higher classes somewhat fuller, but between 1600 and 800 M. somewhat slighter than the ability curves. In this connection it is to be noted:

(*a*) The income statistics embrace persons of all ages provided only they are earning an independent income. Now in the upper and middle classes the sons are still students without independent income up to the age of twenty or twenty-five years; while in the lower classes the children frequently begin to earn wages by the time they are sixteen. The children of the former group are therefore excluded while those of the latter are included in the income statistics.

(*b*) Hence it follows that families with the same income are nevertheless entered under different income groups, according as the family is counted as one unit or as several units. Thus the family of say a subordinate government official with a salary of 1500 M. and with two sons apprenticed, is entered as a unit in the class of 800 to 1600 M.; whereas a family of factory workers in which the father and two sons earn respectively 600, 500, and 400 M., or altogether 1500 M., is entered as three units in the classes below 800 M. Hence in the lower income groups the official figures are larger, and in the middle groups smaller than the real conditions warrant. Statistics, indeed, meets here with insurmountable difficulties, because the conditions of the possessors of income are so dissimilar and so shifting. Thus in the cases just discussed, the expenses of our official's family will be lessened as soon as the sons are through their apprenticeship and obtain an income of their own, whereas in our factory worker's family, a part of the income will be cut off as soon as the sons set up for themselves. But even if the economic position of the two families is for the moment the same, there exists a social distinction, and, from a less temporary point of view, a decided economic difference.

(*c*) In the highest income categories are reckoned the incomes of

corporations each as one unit. In reality, however, these incomes are divided among the stockholders, that is, among a considerable number of units which belong in the groups below. Hence, again, there is an artificial diminution of the middle income categories, this diminution corresponding this time to an excess in the upper income classes.

It results from the above considerations that the method and form of the official statistics of income tend to contract the curve in the class 800 to 1600 M. unduly, and to expand it unduly in both the lower and the higher categories, and that if the real conditions could be truly expressed, the income curve would correspond even more closely than it now does to the ability curve.

The broadest part of the income curve in Saxony lies, not in the lowest, but in the next to the lowest group, in the group, namely, of 500 to 800 M.; more exactly, the broadest part corresponds to an income of about 600 M.[1] This circumstance shows once more that our groups of mediocre ability correspond with the great mass of the laboring class. The number of persons with incomes below 600 M. is a decreasing one, and the income curve diminishes down to the point of no income, following closely the contour of the ability curve. At this point the income curve ceases. Like the true form of the social pyramid (Fig. 2), it rests upon a horizontal base line.[2] I have in Fig. 3 continued the lower part of the ability curve by means of a dotted line. This last corresponds with the frequency of what may be called negative incomes, if we may use this term to indicate the net economic

[1] I take this opportunity to dispute the statement made by G. VON MAYR in the *Allgemeine Statistische Archiv*, that in accordance with the real conditions the most frequent income is a lower one, namely, in the class 400 to 500 M. He neglects entirely the circumstance that the rate of taxation increases at the 500 M. point, and that therefore many persons whose income is really somewhat above that point, contrive to be reckoned below it, in order to escape the higher rate. This is psychologically probable, and is shown by the extraordinary excess in the class of incomes returned from 400 to 500 M. Moreover, it is well known, for example in Baden, that because of the difficulty of calculating the peasants' incomes in terms of money, the farmers of a whole village are often reported together at 500 M. each, without regard for individual differences. Similar methods doubtless prevail in Saxony and in other states. Lastly, it is necessary, as we have explained above, to allow for the different intervals covered by the income classes of the official statistics, then to place the groups together as we have done and to round off the rough corners.

[2] [As already noted, the base line of the income curve corresponds with the base line of Positive Social Usefulness as fixed by Charles Booth. See Fig. 2a, p. 220. —TRANSLATOR'S NOTE.]

benefit to society (certainly a negative quantity) of those who run into debt, of the vagrants, beggars, and thieves, and further, of the inmates of asylums, prisons, poorhouses, and the like, who possessing no income and performing no services, are nevertheless supported. That this negative part of the income curve corresponds pretty closely to the lower part of the ability curve is not only probable on theoretical grounds, but as we have seen in section V, is demonstrated empirically by the statistics in Booth's *Life and Labour of the People.*

With the above similarities we must be content. There will, perhaps, be those whose ultra-schematic sense of justice demands that the most highly endowed or most useful individual shall have the highest income, the next most efficient persons the next highest incomes, and so on. For the purposes of society, it is sufficient if the higher incomes correspond roughly and in large categories with the higher gifts, the lower incomes with the lower abilities. And this, in a large and general way, is what does happen. The variations can be understood and at least partly justified in the light of our theory.[1]

Thus, as we have already explained, a strongly altruistic temperament tends to hinder its possessor from rising above a certain stage of income. The same may be said also in general of a high degree of devotion to ideal interests. On the other hand, an egoistic and materialistic temperament favors such a rise. Hence it is comprehensible, if many finely endowed persons of the aristocracy of culture, while they have their own peculiar rewards, fare less well in the goods of this world than men of ruder and perhaps intrinsically lower talents, who devote themselves to business careers. Experience teaches that the highest public officials, statesmen, scholars, investigators, etc., in spite of pre-eminent intellectual powers and exceptional education, do not often rise above a modest income, whereas the upper categories of wealth are filled by the great industrial organizers, merchants, manufacturers, land owners and speculators, bankers, and the like. It can hardly be maintained that the services of this latter class are always more important or useful for society than those of the former. The economic inferiority of the devotees of science, culture, public and altruistic duties, comes not so much from any inferiority of their powers, as from the direction in which they utilize these, and from the

[1] The correspondence holds, of course, only between the numbers of persons in a given income class and in the correlative ability class. The data at hand do not touch the question of a correspondence between ability and remuneration in detail.

temperament of the individuals concerned. In the case of the working classes, however, it cannot be assumed that the small or moderate incomes that prevail are the result of any excess of altruism or of idealism; what is lacking here is, rather, sufficient strength in the intellectual, moral, and economic traits to advance the individual to a higher position.

To what purpose should society attempt to bring about artificially an equalizing of these distinctions? It would be of no general advantage if our officials and scholars could compete with the industrial magnates in luxury and display; on the contrary, it would be a disadvantage, as they would be overwhelmed in the details of the gaining and management of wealth, and their disinterested and ideal aims and activities would suffer. On the other hand, the great prizes of industry and business have their justification as a stimulus to call forth the full efforts of the natural-born organizers who are essential to the industrial welfare of the community. There is, moreover, a tendency toward a certain equalizing of wealth between the two groups concerned, and that, too, in a natural and relatively harmless way, in that the sons of very wealthy men frequently take up official and scientific careers, and that the daughters marry, preferably, persons engaged in these careers. A side income is thus created for officials and scholars which renders them independent without spoiling them—though it must be admitted that it sometimes does this.

Somewhat similar observations hold good in the case of the lower income classes. An improvement in general wages will bring a preponderance of advantages only indirectly through a selective process and only if certain other conditions are fulfilled. These matters are treated in more detail in another part of this book. It is possible in the present connection only to suggest certain points: (1) The first consequence of the richer nutrition which an increase of wages makes possible is to stimulate all the activities and instincts. With many individuals the harmful instincts gain the upper hand, and the influences of natural selection tend to destroy such, or at least to prevent the perpetuation of their race—and this to an extent more marked than before the advance in wages. (2) The net result upon the quality of population and the general social conditions is, after the selective process has done its work, advantageous, provided, (*a*) that the better laborers have married principally within their own class, and not with the proletariat proper; (*b*) that the increase of the laboring class has

not been too rapid; (*c*) that the easier conditions have not made it possible for the proletariat to increase; (*d*) that the current of population from the country to the cities has not been too much stimulated; (*e*) that immigration of lower foreign races or nationalities has not been encouraged.

VI.

FURTHER CONSEQUENCES OF GALTON'S ABILITY CURVE.

Many readers will not easily make friends with the thought that the number of men of genius and high talent should be so small that the highest class should be represented by only one person in a million, and the highest three classes together by only 250 in a million, or only one in four thousand. Whoever follows the matter to its foundations, however, will not deny that theoretically the middle part of the curve ought to be much more extended, and that the proportion of the highly talented should be even smaller, that is, if we take into account only those laws that have been considered up to this point.

The proof is that with eight dice of six sides each, as we have seen, the highest throw, an all six, would occur only once in 1,679,616 possible throws. There are, however, surely more than eight separate traits which must combine in one man of true genius, and it is not an overstatement to regard the given traits as at least six times as strongly developed in the man of genius as in a weak-minded person. We have seen, further, that with eight twelve-sided dice the highest throw is found only once in 430 millions. More than all this, it has been shown that the same law of probability applies further to diminish the frequency with which the higher grades, as compared with the mediocre grades of each particular trait, can occur. If we consider all this, it appears that the man in whom the different traits combine, each in the highest degree of strength, would occur not once among a million, as Galton assumes, but only once among many millions. The empirical evidence, however, shows, as we have seen, that Galton's figures correspond fairly closely to reality. It would then seem that there must be some causes not yet brought into consideration which favor the production of men of genius and talent.

Such we shall find to be the fact. Galton himself gave this point no consideration, since he believed that he had guarded against any such difficulty by his theory of "stable forms." This theory rests on the assumption that certain mutually helpful characteristics have already,

as tendencies in the germ plasm, formed a very closely united group, so that they are not easily separated in the reducing division, and are therefore transmitted together. A support for this theory could be found in the phenomena of "correlative heredity" as described by Darwin, who shows that related parts of the body vary in the same direction; that, for example, the feathered feet of doves take this peculiarity from the wings. But it is also established by Darwin that long beaks and long legs go together. Beaks and legs have nothing directly to do with each other, although the picking up of food on the part of long-legged birds is of course facilitated by the possession of long beaks. These correspondences can also be explained in this way: that the influences which in the germ plasm cause a variation of the determinants of different parts of the body, work in the same or a similar direction, without there being necessarily any closer relation than this among these determinants. Against Galton's theory of stable forms is the fact that selection is able to separate the peculiarities alleged to be connected. Thus it is possible, by methodical selection, to breed birds with short beaks and long legs. Man himself has been treated in a similar way by natural selection, for his legs are disproportionately long and his arms relatively short; and this peculiarity can have been brought about only through natural selection in adaptation to an upright position or carriage. The young of a species often present at first the older or original structure, which disappears only with their growth. Thus new-born children, with their upper and lower limbs of nearly equal length, show the characteristics of quadrupeds. Children even in the second or third year can easily go on all-fours, while grown people, if they attempt to imitate them, will generally fall on their knees. Still more strikingly, the fact that the short toes are associated with the long legs and the long fingers with the short arms, contradicts the assumption of correlative heredity and of stable forms.[1]

This applies equally to the mental traits. The peculiarities which are to become mutually useful in the individual, as, for example, intellect and will power, are represented in the germ plasm only by small, hardly distinguishable structural elements, the mechanical connection of which depends probably upon molecular forces wholly different from those which correspond to the given mental traits in the mature individual Moreover, Galton's assumption could explain only the

[1] Cf. A. WEISMANN, *Die Allmacht der Naturzüchtung*, p. 11, Jena, 1893.

transmission of the existing characteristics of a man of genius to his children, not the frequent new appearance of genius through the happy combination of certain traits of different ancestors. This last mentioned phenomenon gives us the key to the riddle.

There exists in society a natural institution which performs the function of rendering the suitable combination of two individuals in marriage far more frequent than it would be under the mere laws of probability. This institution is the most remarkable which the evolution of social life has produced. It exists exclusively among men, but in human society it is universal; it exists in an incomplete way even in the lowest known stages of culture, and it develops into a more effective form in the higher stages. This institution is the separation of the superior classes from the great mass of the population.[1]

VII.

THE SIGNIFICANCE FOR THE LIFE OF SOCIETY OF THE EXISTENCE OF SOCIAL CLASSES.

By most educated persons, as also by most publicists and sociological writers,[2] the existence of more or less exclusive social classes is regarded as an unfortunate relic of half barbaric times, as a harmful survival which one would do away with if it were possible. Fortunately it is impossible. The social instinct of individuals is infinitely more powerful than are rationalistic abstractions of the equality of all men. As in even the lowest stages of culture there is something of a barrier

[1] "It will always be true that superior power and faculty will secure superior advantages, and that these advantages will have their effects in personal character and situation." "They seem to increase with civilization, because progress implies variation.

"It is the common boast in America that we have no social classes . . . . *but the fact of stratification exists.* . . . . Social stratification in America rests . . . . chiefly on wealth [culture] and occupation. Those who are relatively rich and can command fine houses, indulge in luxuries and cultivate fine manners, *separate themselves from the others.* . . . . The manifestations of the classification are in the choice of the best residence districts in the cities [in various kinds of display] . . . . and *in marriage alliances.*"—C. R. HENDERSON, *Social Elements: Institutions, Character and Progress* (New York), 1898, pp. 279–280.

[2] [It is interesting to consider Ammon's treatment of social distinctions and privileges in comparison especially with the treatment of the same subject in BENJAMIN KIDD'S *Social Evolution*, since both authors start out from the theory of natural selection. See also MALLOCK, *Aristocracy and Evolution* (New York, 1898).—TRANSLATOR'S NOTE.]

between the families of prominent chieftains and the rest of the tribe, so in the highest developed societies social classes continue in spite of all theoretical objections, and the members of each class marry preferably within their own order. An institution which is so extended throughout the race, which maintains itself so stubbornly against all the alleged grounds of reason, which if forcibly done away with, shortly reappears, must necessarily have some kind of social utility. This everyone familiar with the point of view of natural science will admit. As a matter of fact the institution in question performs several different functions in the life of society. The most important and distinctive of these functions is that which has been already suggested. It is the only one with which we need to concern ourselves in the present connection.[1]

The existence of social classes restricts "panmixia" and thereby makes possible a much more frequent production of highly endowed individuals.

Panmixia is the pairing of individuals without previous selection. In this sense it can of course occur in monogamy as in polygamy; it is not to be confused with promiscuity or with so-called "free love," which would not exclude considerable methodical choice. The increase of useful traits requires the union of those individuals who possess the traits in question — be it by methodical, or be it by natural selection. The mere chance union of nondescript individuals cannot produce a higher variety, but will, on the contrary, work against selection. Without continual selection the species could not maintain themselves at the height of their present development; the cessation of selection — that is the prevalence of panmixia — is sufficient to bring about a deterioration of the race.[2] We will now see how the existence of social

[1] Other functions of social stratification are:

1. The isolation of the children of the superior classes from the great mass makes possible their more careful bringing up and education.

2. The better nourishment and less sordid manner of life of the individuals belonging to the superior classes influence favorably the activity of the higher intellectual traits and thus promote the progress of society.

3. The pleasant conditions of the life of the upper classes spur the members of the lower classes to exert their best powers in competition in order to obtain a share in the same advantages.

[2] [Cf. KIDD, *Social Evolution*, chap. ii. ". . . . if the continual selection which is always going on amongst the higher forms of life were to be suspended, these forms . . . . must actually go backwards. . . . . if all the individuals of every generation

classes serves to lessen panmixia, and thereby to institute a favorable process of natural selection in the breeding of men.

For this purpose we may assume first that we have a group of one million male individuals, among whom the different degrees of ability are distributed according to Galton's calculation. There will then be one great man or genius of the class X. Now let us assume that this pre-eminent man is to choose a wife from a group of female individuals constituted in the same way of similar grades of ability, containing then one woman of grade X. Let us assume further that neither law nor custom hinders the man from selecting his wife as he chooses. Now the probability that the man of class X should choose the woman exactly fitted for him, that is the woman of class X, is very small, namely, one chance in one million ($\frac{1}{1000000}$). In this connection it should be remembered that the intellectual and moral characteristics of the male ancestors can be transmitted through females to the male children, and vice versa. Under the above conditions, the possibility of a fitting marriage for the most highly gifted individual of either sex and the possibility of a posterity also of grade X would be extremely slight.

If the choice of spouses were left wholly to chance, men of every degree of ability would marry indifferently women of the various grades of ability. High talent would wed mediocrity and vice versa, and we should have what, following Weismann, we have called panmixia. Moreover, with parents of widely contrasted peculiarities it is not to be assumed that the children will resemble the more gifted parent, nor even as a rule that they will equal the average ability of the two progenitors. As we have several times noted in this work, the union of inharmonious parental tendencies is not only disadvantageous in its direct results, but it also carries with it the danger of reversion to earlier stages of development (atavism). Nature commends the union of like and like.[1]

Let us now assume that the man of class X, instead of being wholly unguided in his choice is induced through law or custom to choose his

in any species were allowed to equally propagate their kind, the average of each generation would continually tend to fall below the average of the generation which preceded it, and a process of slow but steady degeneration would ensue.—TRANSLATOR'S NOTE.]

[1] Cf. AMMON, *Die Gesellschaftsordnung*, p. 12; *Die Natürliche Auslese beim Menschen*, Jena, 1893, § 326; G. V. DE LAPOUGE, *Les Sélections sociales* (Paris, 1896), chaps. i. and iv.

wife only from, say the three higher classes of the female population, that is, from classes X, G, and F. The conditions are now radically altered. Instead of from a million, he has now to choose from only 248 individuals, and the probability that he will choose the one woman of class X is increased from $\frac{1}{1000000}$ to $\frac{1}{248}$, that is, the chances are now over 4000 more favorable that equally pre-eminent geniuses will be born in the next generation than would be the case if panmixia prevailed.

Further, the men of classes G and F have, if their union is confined to the females of classes X, G, and F, the most favorable prospect of producing children whose abilities will not be below class F, while under panmixia the probability that their children will belong to a lower level is very great, namely $\frac{999753}{1000000}$ or about $\frac{3999}{4000}$.

In the existence of social classes the members of which preferably marry into families of about equal standing, we have, then, the key to the fact brought forward in section VI, that genius and high talent appear much more frequently than would be the case under the mere law of probability if panmixia prevailed. Although the existence of classes does not altogether prevent panmixia, it greatly limits it; the result of the prevailing class distinctions is to favor the intermarriage of individuals from the highly talented classes and hence to increase the proportion of children of high natural endowment.

It will doubtless be objected that the social classes are not identical with Galton's ability classes, and that marriages frequently occur in defiance of class distinctions. A degree of weight may freely be granted to both these objections. Still they have only the force of exceptions; the general conditions correspond to our assumptions. Moreover, we have ample leeway to allow for the influence of even a great number of exceptions. It is not at all necessary for our argument that the existence of classes should multiply the chances for the birth of gifted persons 4000 times, as we have seen would be the case theoretically, if social distinctions corresponded exactly with Galton's categories of ability. It is enough if the chances are improved a thousandfold or a hundredfold, or even less; and no thoughtful anthropologist will deny that such a favorable influence exists, even if a definite measure cannot be found for its extent. The existence of classes promotes the favorable working of natural selection among men and establishes a natural breeding in the Darwinian sense.

If social distinctions could be abolished and if men ceased to marry

preferably within their class, the consequence would be a marked diminution in succeeding generations in the proportion of individuals of high endowment. There would be correspondingly a decrease in the proportion of those of exceptionally weak capacity,[1] and the result would be even a greater proportion than at present of persons of mediocre or average ability.

OTTO AMMON.

KARLSRUHE IN BADEN.

[1] In accordance with the symmetrical form of the ability curve above and below the mean, there would at the same time result a corresponding decrease in the number of individuals of exceptionally poor endowment. For this class also would no longer marry so exclusively among themselves with the effect of producing a similar posterity. We see from this that the institution through which the proportion of the highly endowed is increased has also its unfavorable side. Another disadvantage that it has is the danger that arises from inbreeding. Where a few pre-eminent families constantly intermarry not only the excellencies but also the special defects are perpetuated and intensified, and there result not only exceptionally gifted, but also worthless and even idiotic persons.

FURTHER DATA OF ANTHROPO-SOCIOLOGY.

Of the many recent works which concern themselves with the subject of anthropo-sociology, or with the allied subjects of ethnic psychology and the ethnic interpretations of history, the greater part are works of criticism or vulgarization, rather than of research. Three rather notable works of this order are those of Novicow, Winiarski, and Fouillée. Novicow's *L'avenir de la race blanche* is an interesting, but so far as concerns our subject, not a very serious nor even candid discussion; Fouillée's *Psychologie du peuple français* is a brilliant and extremely suggestive criticism which borrows so much from the works criticised that the author may almost be claimed as an exponent of anthropo-sociology.

Demolins's *Anglo-Saxon Superiority* is significant from our present point of view as a clear expression of the realization so prevalent among the thoughtful in France of the lack of the "devouring spirit of initiative." If we find that the disappearance of initiative in France, which this author attributes to various causes, largely superficial, has in fact been parallel with the disappearance of the ethnic element which formerly directed the destinies of France and with the increasing preponderance of the more passive elements of the population,[1] we may see in the almost unnoticed substitution of one race for another the main cause of the decadence of the French people.

Of quite a different order is Odin's *Genèse des grands hommes*. It embodies investigations which formed almost the life-work of the author, a professor in the University of Sofia, and represents perhaps the first application of the statistical method on so large a scale to the study of genius and talent as related to environment and heredity. The material for this work was gathered before the methods of ethnic analysis were understood, but certain of the results may be indirectly utilized. These form the basis of a paper to be published presently. It may be noted here that the main result of his work so far as germane to our present subject, is the extraordinary extent to which great men are born among the upper social classes and particularly among the urban classes. The ethnic significance of this will readily appear

[1] Cf. Lapouge, *Les sélections sociales* (Paris, 1896), p. 75.

in connection with the law of social stratification and the law of urban concentration.

More directly significant for our subject are Professor Ripley's notable chapters on *The Racial Geography of Europe.* Their publication marks an epoch in the development of anthropology as conceived by the progressive students of that science. Reserving detailed comment for another occasion, I may note here certain inconsistencies in his position toward anthropo-sociology. He has been brought by the force of the evidence to an acceptance of Ammon's law of migration and his chapter on "Urban Problems" reads like the production of a member of the same school. Again, at various points in his work, as where he asserts that "this type [*Homo Europaeus*] is widely prevalent among the aristocracy all over Europe," and "certainly predominates in the ruling classes today,"[1] he is affirming something very like the law of social stratification. More than this, he apparently accepts the most sweeping of these laws: "The law of the greater energy and activity of *Homo Europaeus.*[2] After having swallowed and inwardly digested these camels of anthropo-sociological conclusions, it seems strange that Dr. Ripley's skepticism should rebel when it is further suggested that the ecomonic efficiency of a population is largely dependent on its ethnic composition, that concretely an advanced stage of industry and great wealth-producing capacity are characteristic of populations in which *Homo Europaeus* forms the predominant, or at least the *controlling* element. It is true that the evidence for this law of wealth distribution is less direct than the evidence for some of the other laws; but if one admits, as Dr. Ripley appears to do,[3] the greater energy, ambition, hardiness, courage, domineering spirit, and nobility of *Homo Europaeus*, if one admits further that in general the areas of his habitat are the most advanced industrially, is it not justifiable to conclude that the racial composition of population gives the main clue to wealth and progress?

As against this conclusion, Ripley cites certain negative evidence.

[1] *Popular Science Monthly*, November 1897, p. 56.

[2] "The contrast of this type whose energy has carried it all over Europe, with the persistently sedentary Alpine race is very marked. A certain passivity or patience is characteristic of the Alpine peasantry . . . . from Spain as far as Russia where the great inert Slavic horde submits with abject resignation to the political despotism of the house of the Romanoffs."—*Popular Science Monthly*, March 1898, p. 601.

[3] *Popular Science Monthly*, March 1898, pp. 600, 601.

Part of it is hardly pertinent to the present question, but tends to establish the position of a third ethnic element — the Mediterranean — in the hierarchy of races,[1] rather than to throw any light on the relative position of *Homo Alpinus* and *Homo Europaeus*. The one argument of weight brought forward is that Saxony with its brachycephalic population is more advanced — in frequency of suicide! — than is northern Germany. It would be more to the purpose to cite the fact that Saxony is industrially the most advanced of the German states. This apparent exception to the laws of anthropo-sociology can be readily explained. Among other considerations are these: (1) At the time the various regions were settled by the different racial elements the choice of location depended mainly upon agricultural possibilities, and the level plains were preferred by the Germanic elements to the mountainous regions. The utilization of coal and iron has changed the relative desirability of the different regions. In time there will probably be worked out through migration a new concentration of the dolichocephalic elements in the regions of large industrial possibilities; but this process is necessarily slow and in the mean time the brachycephalic population in a region rich in minerals has therein an advantage which more than compensates for any racial differences. (2) The anthropo-sociologists have not, however, intended to deny that brachycephalic populations have strong instincts for industry and business. In Ammon's *Natürliche Auslese beim Menschen* it is several times pointed out that the long heads tend rather to scientific studies, the round heads to industry. It is, however, probable that the more original and creative industrial leaders and organizers belong rather to *Homo Europaeus*, that "the dolichocephalics originate the inventions which the brachycephalics exploit." (3) Moreover the brachycephalics of southern Germany are not, as Professor Ripley implies, the same as the brachycephalics of France. It is misleading to say that "Bavaria, Baden, Würtemberg are no more Teutonic by race than Auvergne."[2] In the Auvergne the cephalic index runs from 83 to 88; in south Germany it is somewhere about 83 to 85. In stature the south Germans are some three centimeters superior. More than all, as regards color, the percentage of light hair and blue eyes is three or

[1] It tends, I think, to support the second thesis of my paper: "The Hierarchy of European Races," *American Journal of Sociology*, November 1897, pp. 321 ff.

[2] *Popular Science Monthly*, February 1898, p. 479.

four times as great in Bavaria, Baden, Würtemberg and Saxony as in Auvergne.

Reserving, however, further discussion of these points for a more opportune occasion, the anthropo-sociological school may well be content to welcome Professor Ripley — as it has done Dr. Collignon and A. Fouillée — as on the whole an adherent, if indeed a somewhat eclectic one.

To accumulate the data on which is based the new science of anthropo-sociology is an extremely arduous and often expensive undertaking, especially in view of the small number of persons actively engaged in this work. Additional data however become available from time to time. The article by Lapouge on "The Fundamental Laws of Anthropo-Sociology," published in this JOURNAL in December 1897, summed up most of the evidence then available. If its tone seems somewhat dogmatic and the arrangement a little over schematic, these characteristics are the result of the attempt to formulate the results available into sharp generalizations or "laws," which would stimulate the collection of further data and give a clue to its analysis, arrangement, and interpretation.

An important body of such data became available in the publication of Professor Muffang's *Études d' anthropo-sociologie: Écoliers et paysans de Saint-Brieuc*, which was summarized in this JOURNAL for March 1898, under the heading "The Pedagogical Significance of the Cephalic Index." Another important body of data appears in a recent joint work of Durand de Gros and G. de Lapouge: *Matériaux pour l'anthropologie de l'Aveyron.*[1] As in the case of the companion monograph on the department of l'Hérault[2] the material for this work was gathered with a view to a purely anthropological description of the population. Fortunately a part of it was collected and preserved in such form as to be available through ethnic analysis for the study of anthropo-sociological problems. As the monograph is not very readily accessible, I reproduce here, together with some data of my own, the section devoted to anthropo-sociology. As it may be regarded as an addendum or continuation of the "Fundamental Laws," it is best to keep the same formal method of exposition. If the reader can conveniently refer to the two numbers of this JOURNAL mentioned above, he can easily fuse

[1] *Extrait du Bulletin de la Société Languedocienne de Geographie*, 1898, pp. 1–75.

[2] *Ibid.*, 1894, vol. xxiii, pp. 1–52.

the three articles into one, and can better appreciate the full force of the data.[1]

In the introduction to the paper on the "Pedagogical Significance of the Cephalic Index," I pointed out the nature of the service that anthropo-sociology can render to the empirical science of ethnic statistics, and argued that "the student of a given population, even for purely descriptive purposes and without any direct interest in sociological problems, cannot neglect such distinctions as that between stationary and migratory population, ... between mountaineers and dwellers in the lowlands, between rural and urban residents, between peasants, laborers, skilled workmen, and the professional classes."[2] The reader of the work now under review will find many further proofs of the truth of the above statement, both in the main results of the monograph and in many incidental matters. I may note here one of the latter, which strikingly illustrates the sort of service that anthropo-sociology can render to the science from which it draws most of its data: In Aveyron as in Auvergne and in Brittany, it has been found that the skulls of females are less brachycephalic than those of males in the same population. It would perhaps puzzle the anthropologist of the old school to find the correct explanation. The anthropo-sociological laws of migration account very clearly for the apparent anomaly. Take, for example, the series of skulls of Sainte-Radegonde, near Rodez in Aveyron. The seriations are as follows:

Indexes	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
Male skulls.....				1	2	4	2		1				2				1
Female "	1	2		1	1	5	2		2	3	1				1		

Small as is this series, it indicates to the anthropo-sociologist that there has been at work a double process of migration of the male population. The least brachycephalic male elements have emigrated to seek their fortunes elsewhere, probably toward the larger cities, hence the absence or comparative infrequency of males under the lower index

[1] I take this occasion to note certain typographical errors in the above articles. In "Fundamental Laws" p. 81 near center, read "respectively *156;*" p. 90, omit *m* in table after 78.2. In "Pedagogical Significance of Cephalic Index" p. 256, thirty-first line, read "an index of *84.33;*" p. 261, lower table in second column, for 81. 3 read "*83.1;*" in fifth column, for 80.9 read "*81.3;*" in sixth column for 83.5 read "*81.9.*"

[2] JOURNAL OF POLITICAL ECONOMY, March 1898, p. 255.

numbers. To a certain extent, the places of these emigrants have been filled by immigrants from the extremely brachycephalic communities of the neighboring uplands, hence the preponderance of males among the high indices. The women have taken a lesser part in both these migratory movements; their indices correspond probably to the indices of the males of the previous generation.

Law of the distribution of wealth: In countries inhabited jointly by *Homo Europaeus* and *Homo Alpinus*, the former element is the more active industrially and possesses more than a proportionate share of wealth. The data for Aveyron were not taken in such form as to offer any direct evidence as to the applicability of this law within the department. But as the cities and the fertile lowlands are the seats of wealth and industry, the local validity of the law may be safely inferred from the evidence given below in support of the law of altitudes and the law of urban indices.

Law of altitudes: In regions inhabited jointly by *Homo Europaeus* and *Homo Alpinus*, the former is concentrated in the lower levels. This law is verified in this department in almost schematic manner. Along the boundary between Aveyron and Lozère where the altitude runs from 800 to 1500 meters, the indices are as high as 88 and 90. Requista and Saint-Sernin where the elevation averages about 600 or 700 meters, have indices of 87 and 88. The plateaux which border on Tarn and Tarn-et-Garonne are from 400 to 500 meters in altitude, and the cephalic indices of the population average 85 and 86.

The same correlation holds in great detail. The population of the calcareous plains of Larzac and its vicinity are less brachycephalic than the dwellers in the high lands which bound them on the north and west; and in this upland region itself the indices diminish with the altitude from east to west. Further north all the region of the plateaux around Rodez, Bozouls and Estaing with an altitude of 500 to 600 meters, yield indices from 86 to 87, while on the surrounding slopes the indices of the people increase with the altitude of their habitat.

Law of urban indices: The cephalic index of urban population is lower than that of surrounding rural populations. This law was discovered by Durand de Gros in this very department, and his *Excursion anthropologique dans l'Aveyron* (1869) may be regarded as the oldest document of anthropo-sociology. Durand found that in the arrondissement of Rodez 117 rurals gave an average index of 86 while 27

urbans gave an index of 83.2. In the arrondissement of Milhau the rural index was 85.8, the urban 84.1; in that of St. Affrique the two indices were respectively 83.4 and 82.2. As regards the absolute dimensions, the heads of the urbans were in the case of each arrondissement longer, and usually narrower, but taking both dimensions into account more capacious than those of the rural population.

In the similar series included in the present memoir, the results are similar in principle although not exactly the same in detail since the basis of classification is somewhat different.[1] For the canton of Rodez the conscripts of the commune of Rodez (not all properly urbans, as explained in the note) have an average index of 86.73, those of the suburban communes an index of 86.71, and those of the more distant or strictly rural communes an index of 87.71. Although the index of the more urban population is practically the same as that of the suburban, the average dimensions of the head are greater — length 186.4 as against 184.4, breadth 162 as against 159.8. In the canton of Villefranche the commune of the chief place gives an index of 85.96, the rural communes give 86.98.

A more exact picture of the urban population is, however, given in the measurements taken of a group of 43 members of fire engine companies examined in Rodez. For the group as a whole the average head length is 187, breadth 158, index 84.39. Sixteen of these men were born in the commune of Rodez, 7 in the rural communes of the canton; the data for the first group are 185, 157, 84.80, for the second group 192, 161, 83.67. Both these minor groups are, however, thrown out of gear by the presence of certain very exceptional subjects. In the first group is one extreme brachycephalic (length 181, breadth 180 index 99.59) and another almost as extreme (index 97.50).[2] Apart from these subjects the seriation of indices continues regularly enough from 87 down. In the second group, on the other hand, is the only representative of the prehistoric race of the region encountered among the 1200 living Aveyronnais measured (length 220, breadth 158, index

[1] Thus instead of the exact division between urbans and rurals, the form of the data allow only of the approximately similar one between the commune of the chief place, and the suburban and rural communes. But the commune of the chief place is itself in part rural, in the character and occupations of its population. The contrast is, therefore, not quite so sharply drawn as in Durand's first investigation.

[2] With one exception, these were the most brachycephalic subjects found among the 1200 Aveyronnais measured.

71.82). Taking the two subgroups together these exceptional cases nearly compensate each other, and the general result is average length 187, breadth 158, index 84.48.[1] Compared with the results for the conscripts of the canton of Rodez the above head length is greater, the breadth less, and the index less by two and one half unities. The remaining 19 firemen were natives of other cantons of the department. They give an average head length of 187, breadth 157, index 84.18, the head length being again greater, and the cephalic index lower by two or three degrees, than in case of the general population of Aveyron. It is worthy of note that all of the three subgroups of firemen have about the same average head dimensions and index, as if this adventurous calling attracted to itself about the same ethnic elements irrespective of the locality of origin.

Law of emigration: In the case of a population composed jointly of *Homo Europaeus* and *Homo Alpinus*, it is the less brachycephalic element which migrates. Most of the data that have been collected hitherto for the purpose of comparing migrants with the general population of the regions of their origin are confined to migrants within the particular country considered. The following data in regard to migrants or the sons of migrants from France, Switzerland, and Germany to California, indicate very strongly that emigration from European countries is composed (just as is internal migration from one portion to another of each particular country) of the more dolichocephalic elements of the population.[2] This is in one sense indeed only another application of the same law, and the law is in both cases, of course, only one concrete expression of the psychological principle that underlies all these phenomena — the more restless,

[1] The manner in which the three exceptional cases affect the results can best be seen in the seriation of the three subgroups, which is as follows:

Indices	71	72–76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92–96	97	98	99
16, Commune of Rodez.....					1		4	3		3	2		1						1		1
7, Remainder of Canton.....	1							1			3			2							
19, Remainder of Department.			1			1	3	2	1	3	2	1	3		1		1				

[2] The probability that such would be the case, was perhaps first suggested by Dr. PAUL TOPINARD, *Anthropologie générale* (Paris, 1885), pp. 429, 452.

ambitious or pioneering character of *Homo Europaeus*. For this reason it is somewhat uncertain whether recent emigration — since it has become so easy and so cheap, and to such a degree the resort of the unfortunate rather than the undertaking of the adventurous — still draws more largely upon the dolichocephalic elements. But however this may be as regards migration to the eastern or central part of the United States, the migrants who penetrate to California, halfway round the globe from their former homes, are still representative of the more adventurous and enterprising of their class. It is, therefore, not surprising to find them decidedly more dolichocephalic than the sedentary population of the home countries.

The subjects upon which the following data are based are adult males, mostly between 20 and 40 years of age. Wherever possible, they are referred to the birthplace of their parents, in the few cases where this is unknown, the subject's own birthplace is substituted.

For France only two departments are represented by more than one subject. A series of 20 subjects originating in the Hautes Alpes gives an average head length of 192.6, breadth 161.2, index 83.68. Dr. Collignon's index for the resident population of this department is 84.9. The Basses Pyrénées is represented by a series of 11 subjects, who average 192.4 in head length, 156 + in breadth, and 81.12 in index. Collignon's index of the resident population is 83. Nine other French migrants, no two of whom are from the same department, give an average index of 82.9. The average of Collignon's indices for the departments of their origin is 84.0 +.

For Switzerland and Germany we have no longer the advantage of being able to compare our migrants with so exact and definite indices for the corresponding home populations as in the case of the French departments. We know the home indices only approximately, but in most cases the migrants are so decidedly more dolichocephalic that we have ample leeway to allow for possible error in the indices of the region of origin. In these countries, then, we will compare our subjects with the home indices as arrived at approximately by Professor Ripley upon the basis of all available data.[1]

The migrants from Switzerland were measured in four distinct groups. Seven peasants or farm laborers from the rural districts of the canton of Ticino were found to have an average head length of

[1] *Notes et documents pour la construction d'une carte de l'indice céphalique en Europe.*

184.3, a head breadth of 159.9, and an index of 86.75. Five other subjects from the same canton, including some urban residents, gave a head length of 193.4, breadth 164.4, index 85.01. Eight permanent residents of Los Angeles originating from the cantons of Bern, Aargau, Zurich, Luzern, and Grisons, yield a head length 190.1, breadth 157.9, index 83.04. Four others from the cantons of Zurich, Grisons, Schwyz, and Vaud give length 189.2, breadth 158.2, index 83.62. If we combine the first two of the above groups, we obtain an index of 86.0 for the migrants from Ticino, which is evidently a very brachycephalic portion of Switzerland. If, again, we combine the last two groups, we obtain an index of 83.26 for migrants from seven cantons. This last index is probably a fairly typical one as regards rather the better class of emigrants from Switzerland as a whole. Dr. Ripley's map indicates indices for most parts of Switzerland from 83 to 88. His data, however, appear to indicate slightly lower averages than the coloration of the map. Owing to this uncertainty as regards the home population, our results for Switzerland are not in themselves very decisive, but they seem to indicate that the migrants are rather more dolichocephalic.

More decisive in the same sense are the data for Germany. The general index for Germany is probably between 81 and 82. In north Germany and in certain parts of south Germany, it is perhaps 80 to 81; and in most of south Germany from 82 to 84. Three distinct groups of migrants were measured, each group more or less representative of the various parts of Germany. One group of 13 in which the north Germans[1] were a little the stronger, having 8 representatives as against 5 for the South, gave an average index of 80.05. Another group of 15 subjects, of whom only 4 were from the North, averaged 80.05. Still another group, in which only 3 out of the 18 subjects were from the North, gave an average of 80.40. If we unite these three groups, we obtain a total of 80.18 for a total of 46 Germans, among whom, however, the southern part has a much more than proportionate representation. Redividing these 46 subjects according to locality of origin, we find 15 subjects from north Germany and the more dolichocephalic parts of south Germany giving an average length of 203, breadth 156.8, index 78.28. Seven persons originating in a neutral zone, or with parents originating in different parts of Germany, give

[1] I have in each case included with the north those parts of the south that appear from Ripley's map to have the low average indices.

length 202.3, breadth 162.7, index 80.44. The remaining 24, all south Germans, give length 193, breadth 157, index 81.33.

The meeting of a social club of persons originating in Würtemberg, enabled me to obtain a series of 19 subjects, all originating within that state. The average head length was 190.9, the average breadth 158.4, index 83.21. This is higher than the indices obtained from migrants from other parts of south Germany. It seems probable that the index of the sedentary population of Würtemberg is also higher than that of neighboring states, and I should not be surprised if it were found to be as high as 84, or perhaps even 85. However, there is another possible explanation of the high average index of our Würtemberg series, namely, the presence therein of one very exceptional individual, with an index of 96.87. The next index below is 87.36, and from there down the seriation is regular. The exceptional subject, it is worthy of note, owes his brachycephaly to no deficiency in head length (since his is 192, or above the average of the series), but to the extraordinary breadth (187) of his head.

Baden is the one German state the cephalic index of the present population of which has been exactly ascertained. The index of the army recruits outside of the cities is stated in the forthcoming report of the Baden Anthropological Commission as 83.67. Among the migrants from Germany included in the groups described above only 5 appertain to the Grand Duchy of Baden. These 5 give an average index of 81.14. The contrast in the absolute dimensions is still more striking. The rural conscripts of Baden give length 182.8, breadth 153.8; our 5 migrants give length 190.2, breadth 154.4. It should be noted that in case of Baden the index given for the sedentary population is really that of the rural population, or at least of the population outside the cities. The urban populations are more dolichocephalic, perhaps as much so as our subjects. The urban populations in the home country, like its representatives in the United States, are composed mainly of migrants; and the two classes of migrants are very possibly drawn on the average from somewhere near the same ethnic elements. It would be interesting to make a comparison in detail, but the necessary data are not yet available. If it is allowable to adopt an hypothesis somewhat in advance of the data, it may be suggested as probable that the earlier migrants from Germany, France, and Switzerland to the United States were more dolichocephalic even than the urban populations of their home countries, but that in more recent

years such migrants have perhaps averaged about the same as the urban populations of their home states, both the migrants to the cities and the migrants to a foreign country being more dolichocephalic than the rural populations from which they have originated.

Law of stratification: The cephalic index is lower, and the proportion of dolichocephalics greater, among the higher classes than among the lower classes in each community. An illustration of this law may be found in the above data in regard to the subjects from the Swiss canton of Ticino, where the two small groups were distinguishable in point of occupation and social position; the strictly peasant group having heads at once shorter, narrower, and decidedly more brachycephalic. A close examination of the data for the Hautes Alpes indicates a similar correlation between headform and social position. In the other groups it was not practicable to ascertain the social position of the particular subjects.

A further bit of evidence bearing upon the correlation between head dimensions and social position has but recently come to my notice, in the shape of some Russian measurements by Dr. Pauline Tarnowsky, published as early as 1889.[1] A comparison was made between 50 educated women attending the higher schools of St. Petersburg, but originating in various governments of Great Russia, and 100 peasant women of corresponding origin. The educated women gave an average head length of 183.20, breadth 145.20, index of 79.26. The peasants gave length 181.45, breadth 144.80, index 79.80. The upper class appears then to be slightly more dolichocephalic than the peasants, and to excel both in length and breadth of the head.

Turning again to Aveyron, we find some interesting data in regard to the bodily characteristics of the different social classes. Durand de Gros found an index of 83.96 for the uneducated urbans of Rodez, and 82.78 for the cultivated and aristocratic classes. The monograph now under review carries out more in detail the comparison between different classes.

The scholars of the secondary schools of Rodez gave an average of 85.84, an index which (taking their ages, 13 to 20 years, into account) is equivalent to about 85 for adults.[2] Of the 112 scholars included in the above, 23 are pupils in the Lycée and 89 are pupils of two ecclesias-

[1] PAULINE TARNOWSKY, *Étude anthropométrique* . . . . (Paris, 1889).

[2] See for a study of the change of head form with growth pp. 59–60 of the work under review, and AMMON, *Natürliche Auslese beim Menschen* (Jena, 1893), § 37.

tical institutions. It is curious that the latter group gives the lower index, 85.46, as against 87.31 for the Lycée. The following seriation indicates more clearly than the average indices the ethnic composition of the two groups:

Indices	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94
Lycée.....			1	2	1	1	5	2	2	2	2	2	1	1		
Ecclesiastical Institutions.....	3	5	4	6	4	6	10	12	10	12	3	5	3	3	1	2

From this it appears that, in addition to the element which frequents the Lycée, the ecclesiastical establishments draw also from a more dolichocephalic element. This latter element probably pertains to the upper strata of society, the dolichocephaly of which is indicated by the average index of 82.78 as found by Durand. The absolute head dimensions of the pupils are worthy of note; those of the inmates of the ecclesiastical schools are unfortunately not preserved, but those of the scholars of the Lycée, in spite of their immaturity, are already 184.3 and 161, as against 182 and 157 for the whole department. Those of them over 18 years of age give an average length of 187 and an average breadth of 161.

Another series is that of 33 scholars of the normal school of Rodez, all natives of Aveyron. They give an index of 87.60. They are rather below the average as regards social position, and their cephalic index, allowing for immaturity, is practically the same as that of the class from which they originate. They are distinguished, however, from the bulk of that class by the absolute dimensions of the head, 185.4 and 162.4, as against 182 and 157 for the population as a whole. In all of the data summarized in this and in the preceding articles to which reference has been made, the categories of subjects formed by natural selection, such as the upper social classes, the higher professions, the educated classes, etc., are distinguished from the mass of the population most uniformly by larger head dimensions. Where the two main ethnic elements jointly constitute the population, the selected categories are usually richer in *Homo Europaeus* and give therefore the lower average index. When, however, the ethnic composition of the different groups in society is nearly uniform, the excess in head breadth among the selected categories (and especially among that of intellectual workers) is sometimes more marked than the excess in length.

This last point is more fully developed in Lapouge's *Fundamental Laws*, under the head of "The Law of the Intellectual Classes." It explains in part the high indices among these pupils in the normal school in Aveyron, as also among a similar group in the Côtes du Nord, as reported by Professor Muffang.[1]

Law of epochs: Since prehistoric times the cephalic index through western and central Europe has tended to increase through the increasing preponderance of *Homo Alpinus*. This law is very clearly illustrated in the data available in Aveyron. To compare the cephalic index of a skull with that of a living individual, it is necessary to add approximately two unities to the former when it is below 80, and one unity when it is above 80. Making this adjustment, and reducing the figures to percentages, Lapouge obtains the following comparisons:

	Paleolithic	Neolithic	Ages of bronze and copper	Rutini	Middle Ages	Present population
	%	%	%	%	%	%
Indices 60–64.....		5.5				
Indices 65–69.....	14.2					
Indices 70–74.....	85.2	33.3	13.3			0.4
Indices 75–79.....		50.0	66.6	83.3	61.9	2.5
Indices 80–84.....		11.1	20.0	16.6	38.1	32.4
Indices 85–89.....						49.1
Indices 90–94.....						13.9
Indices 95–99.....						1.7
Indices 100+.....						0.1

Beside this may be placed a somewhat similar comparison between the skulls of 675 ancient Germans and the heads of the present population of Baden. Among the ancient Germans 69.2 per cent. had indices below 80; among the present population 15 per cent. Among the old Germans only 9.4 per cent. had indices above 85; among the present population 33.8 per cent. The average index has increased from about 77.6 among the ancient Germans to 83.67 among the present rural population of Baden.[2]

[1] "The Pedagogical Significance of the Cephalic Index," JOURNAL OF POLITICAL ECONOMY, March 1898.

[2] AMMON, *Natürliche Auslese* (Jena, 1893), §§ 109–116; *Anthropologie der Badener*, in press, pp. 94, 95. See also LAPOUGE, *Les Sélections sociales* (Paris, 1896), pp. 34, 382, 412–420.

Recent anthropological investigations as reported in the *Centralblatt für Anthropologie, Ethnologie und Urgeschichte* show the same process to have been at work in various localities. The most probable explanation of this gradual elimination of *Homo Europaeus* and the increasing preponderance of *Homo Alpinus* is that it is a result of a selective process unfavorable to the former element. The working of that process may be seen in the law of social stratification, and especially in the urban concentration of the more dolichocephalic elements. In the past the Germanic stock wore itself out in warfare; now it throws itself into the stress of urban life, of industrial competition, of ambitious undertakings of every kind. To the brachycephalic elements are left now, as in the past, the humbler tasks, but also the more hygienic and normal life of the peasantry. Success in the struggle for wealth, position, learning, fame, generally means failure in the struggle for existence in the biological sense. The dolichocephalics are more successful as individuals; the brachycephalics as a race.

So it seems from the point of view that looks at European conditions alone. But from a wider point of view the more mobile and restless race has a compensation. If it loses ground at home, it gains an enormous opportunity for race expansion in the newer parts of the world. Anglo-Saxon expansion is the expansion of *Homo Europaeus*. The same is of course obvious also as regards emigration from Holland, Scandinavia, north Germany, and part of Belgium. But, more than this, it appears probable, in the light of the data given in this article, that the emigrants from south Germany, France, Switzerland, and, I may add from less tangible indications, Austria and Poland, are drawn from the more dolichocephalic portion of the home populations. If this hypothesis be sustained by subsequent investigation, it will (1) furnish an additional reason why the cephalic index is increasing in Europe, and (2) show that the white population of the United States, however varied in its linguistic antecedents and its former political allegiance, is, from an anthropological point of view, more homogeneous than often supposed. Otto Ammon, in a brilliant essay, has described the elimination of the so-called Aryan element (*Homo Europaeus*) from the population of the continent under the heading, *Die Arierdämmerung*. If that race is entering in Europe upon its evening twilight, it will perhaps find a new *Morgendämmerung* in America, Australia, and the other regions suitable for its colonization.

CARLOS C. CLOSSON.

NOTES.

THE COMPTROLLER'S OBJECTIONS TO CURRENCY REFORM.

THE current Report of the Comptroller of the Currency has already been subjected to some criticism. Among other things, it has been pointed out that the comptroller is in opposition, on the question of banking reform, not only to his party and its pledges, but to the weight of expert opinion in the United States. It has also been observed that in objecting to the proposed preference of the note holding creditors of failed banks, he has unduly neglected the quality of customary tender, as distinguished from legal tender, which paper of general circulation acquires in transactions between man and man. But the document thus criticised is widely circulated; the talent or experience of the persons charged with the supervision of the national banks has usually been such that their views were entitled to much respect; and the official stamp alone on the opinions advanced in the Report of 1898 is calculated to secure them an attentive hearing. It may not be amiss, therefore, again to examine those parts of the document in which are set forth the comptroller's "recommendations relative to bank currency," and "domestic branch banking," and to indicate, if such there be, the further particulars in which his argument is apparently unsound.

I.

First of all, then, it is to be regretted that the comptroller has chosen to beg the question, as well in his statement of the "assumptions" underlying the more prominent plans for a modification of the currency and banking system, as in his selection of the theses which he attempts to defend. The vast majority of those who advocate currency reform do not, it is safe to say, pretend "that unless we are to have a currency contraction, some radical extension of bank-note issues is absolutely necessary to the securing of the proper adjustment of government currency liabilities to its gold reserve." They base their case on something more respectable than the imaginary terrors of "contraction." Persons at all familiar with the theory and history of

currency know that the retirement of greenbacks or other government paper, though unaccompanied by further alteration in the present system, would cause no greater contraction than that almost imperceptible change which suffices to induce the import of gold. Once that change had occurred, the contraction would cease. As the greenbacks disappeared from circulation, gold would come in, just as in years past gold has been exported, in amounts almost exactly equivalent to those by which the sum of treasury notes of 1890 outstanding has been increased. If, accordingly, the problem were simply that of putting the treasury into better condition, the question would not be, additional bank notes or contraction, but additional bank notes or more gold. Here, however, the answer is clear, for by reason of its economy, portability and higher elasticity at the point when and where a change in its volume is needed, a well secured circulation of bank notes issued against general assets is undoubtedly preferable to one of gold. If the promoters of various schemes of reform have sometimes been at pains to show that their respective plans would not produce contraction, it has been done, not in fear of the monetary bugbear with whose name the comptroller here and elsewhere seeks to conjure, but in deference to the prejudices and loose thinking which have survived the era when greenbacks were not redeemed.

So, too, the statement of the second assumption of the currency reformers, viz., "that through this radical extension and change in the present form of bank note issues alone, is elasticity to be secured in our currency" may well be thought a trifle aside the mark. In the course of his Report, the author attempts to controvert this proposition by remarks upon the extreme elasticity of the currency based on bank deposits. That characteristic, however, the advocates of reform concede. Their arguments for change in the direction of greater elasticity relate exclusively to other money substitutes, to the circulation, that is, of notes. The comptroller's statement is therefore but a stepping-stone to the logical fallacy of equivocation or four terms.

In the "assumptions" again, on which his own suggestions are based, the comptroller seems to imply that the chief consideration urged in favor of changing the system of issue, is the possibility of shifting the burden of gold redemption from the shoulders of the government to those of the banks. Unintended as it probably was, this implication is nevertheless in ill accord with the facts. The circulation of government paper is but one of the financial evils with which the statesmen of the

country must soon begin to struggle. Even if there were no such demand obligations outstanding, the case for a thorough overhauling of our banking legislation would be scarcely less complete than it is at the present time. It is not because we have to guard against the "contraction," to which the comptroller again refers, but because the country is in imperative need of a better distribution of credit facilities, and of a more scientific and useful system of issue than it now has, that there has arisen a widespread and insistent demand for reform.

It is possible, however, to ignore the insincerity or failure to grasp the points really at issue thus indicated by the comptroller's introductory remarks, and to meet him on his own ground. Take, for example, his contention that the proposal to give the holder of paper issued against the general assets of banks a prior lien in case the issuer fails, "is not only inherently wrong and unjustified by any grounds of public policy, but that its practical effect upon the present relation of depositors to banks in the smaller communities of the United States would be so revolutionary as to bring about the most injurious conditions in the general business of the country." Little time need be wasted on the catchwords such as "inherently wrong" and the "fundamental," "sacred," or "inherent moral rights," to which the comptroller later refers in the effort to prove that the depositor in a failed bank is entitled to the same treatment as the note holder. Phrases of this sort may be useful in popular declamation or sciolistic controversy but in a practical, academic, or scientific discussion upon banking legislation, they have no place. The respective rights of depositor and note holder under a system of chartered or incorporated banks are exactly what the law — in part the common law, but in greater measure, the particular statute regulating such institutions — has declared them to be, and of this the comptroller, as a person who has practiced the profession of law, is unquestionably well aware. Whether the depositor's claim is put in the same class as the note holder's, or relegated to second place, is wholly indifferent from the ethical view; the question must be decided by considerations of expediency, of economic policy, alone.

II.

Now as a demonstration of the inexpediency of the proposed reforms, the comptroller's argument is far from perfect. It is characterized by grave faults. Some are merely technical errors of reason-

ing; others deserve no milder description than gross mistakes of fact, while a third variety, had the forecasts and predictions in which they appear come from less distinguished an author than the signer of the Report, would probably be ascribed to ignorance of the operation of monetary laws. Without attempting exactly to group the defects of the argument according to this classification, it is worth while to note:

1. That it is impossible justly to criticise the principles underlying the more important plans of reform, by merely examining their operation one by one, by simply scrutinizing the plans in detail. In first condemning the proposals with respect to issue reform and then the project to permit the conduct of branch banks in towns of more than 2000 inhabitants, the comptroller cannot demolish the schemes as a whole. Even if his objections to either of these changes were well taken, the propriety of rejecting the plan which embodies them both would not be established until it had been shown that the mutual working of these features, their joint action, the resultant of the forces which they are likely to set in motion, would fail to bring about the desired improvement in credit conditions or cause some positive harm. This, however, is a logical necessity which the comptroller has made no effort to meet.

2. The assertion that "the essential similarity between the liability of a solvent bank expressed by a deposit credit and by a bank note is generally recognized and emphasized by those advocating these plans" expresses but a part of the truth. What has been recognized by various writers on currency from Alexander Hamilton down is the essential similarity of debts on deposits or notes from the view of the bank intent on gain. Supposing the one may be created as freely as the other and is as acceptable to its customers, it makes no difference to the bank whether it buys commercial paper by writing a book credit or issuing its notes. But an extension of this similarity to all aspects and functions of the two sorts of liability such as the comptroller undertakes in his phrase "In view of this recognized similarity before the insolvency of a bank, etc.," is neither countenanced by sound doctrine nor warranted by the facts.

Under certain circumstances and for certain transactions, of course, checks and notes are interchangeably available, but in others their functions are quite distinct. If they were not, the unidentified traveler with an ample bank account would need to carry only a check book in

his pocket, and the annual outward flow of currency to move the crops could be avoided, for the most part, by the expansion of book credits with the bankers of the South and West. As things are now, those sections of the country, in which, in greater or less measure, notes form the predominating element of the media of exchange, cannot obtain increased credit so quickly or easily, when an increase is needed, as those in which checks are more largely employed. It is precisely to remedy this inequality — to give the circulation of note using sections and in consequence their credit facilities, the same elasticity which deposit using communities now enjoy — that the changes in the system of issue have been proposed.

3. As the *Bankers' Magazine* most justly observes, the comptroller has neglected the conventional necessity of accepting in payment those substitutes for money, transferable by mere delivery, of which that part of a community's circulating media is chiefly made up. Of all the fiduciary substitutes for money, not a legal tender, bank notes are most like money. When issue is profitable, moreover, and when the competition between issuers is keen, other forms of money substitutes of similar functions are likely to be expelled from the field. But when bank notes are the principal form of currency used in the smaller exchanges, many persons have practically no option whether to accept them in payment or not. A retail trader, for example, would often be forced to receive the notes by custom, and by the probability of having to lose his sale or wait for satisfaction unless he took it how and when it might be offered. Notes of particular banks might indeed be refused, but few large establishments, and much less the smaller shopkeepers and the army of artisans, would undertake to reject the notes of every bank in the national system once the changes criticised by the comptroller had been introduced. As a usual thing, the paper would be taken even if the transaction involved some risk, and the bearer of a bank note would hold a debt, which, though not of his own seeking, it was conventionally necessary to accept. The note holder, therefore, could well be called a quasi-involuntary creditor of the bank whose promise the paper bears. As a quasi-involuntary creditor, he has good and ample claim, of course, to special legal protection. The comptroller refers to Canada as the only country in which this doctrine is recognized in law; but here he errs in his facts. The note holder's priority has long been an established principle of American banking legislation, introduced by Connecticut in 1831, adopted by Ohio in

1845, by New York in 1846, by Massachusetts in 1849 and is still to be found in the statutes of Georgia, New Jersey, Massachusetts and of the federal government itself. "For any deficiency in the proceeds of all the bonds of an association, the United States shall have a paramount lien upon all its assets."[1] The principle is thus conceded, notwithstanding, in practice, it has been unnecessary to carry it out.

4. For the depositor, on the other hand, the acceptance of a bank's promise is in most cases entirely a matter of his own volition. No convention constrains him to cash the checks of persons he does not know; or to accept paper drawn upon banks he believes to be unsound. Furthermore, he is ordinarily able to pick and choose when deciding to what bank he will entrust his funds. The comptroller, indeed, implies that the depositor is "comparatively indifferent under normal conditions" to the duty of exercising great discretion in this choice, but that is a compliment to their intelligence for which the business men of the country will hardly show much gratitude. Nor will the generality thus confidently advanced serve long in explaining why the deposit lines of some institutions constantly increase, while those of other national banks stay where they long have been, or fall off, perhaps, until the bank's existence is snuffed out by the honorable method of voluntary liquidation.

It is true, to be sure, that the national government has assumed the supervision of banking institutions, but by no means true that this supervision is always properly conducted, or that the protection which it affords the depositor or public is quite complete. There are bank scandals a-plenty by which the inadequacy of the present government inspection might be shown, but the efforts of successive comptrollers to obtain amendments to the law upon inspection and supervision furnish at once an easier and more decisive proof. In any case, it is hard to believe that depositors can regard the national supervision as adequate means for detecting untrustworthiness in banks so long as, according to the admission of even the present head of this bureau, systematic violation of the law in certain particulars is systematically condoned. The prudence, experience, judgment, integrity, ability, and success of bankers, or their lack of these qualities, may become matters of common report in a business community, as easily as they reach the ears of the government inspector, or even the comptroller himself, and until such qualities are regarded as of no importance in determining

[1] § 5230 *Revised Statutes of the United States.*

the credit of men, it is likely that they will influence the depositor in his choice of a bank.

If he deals with a weak bank, because he cannot borrow of stronger concerns, the safety of the proceeds of his loans is wholly his own affair. Should the bond security for national bank notes be abolished, and the depositor object to the note holder's unqualified priority of lien, there are state banks or trust companies where his account would be gladly received. At any rate he belongs, as a voluntary creditor of his bank, in a different category from the frequently quasi-involuntary creditor on notes. His position being different from the note holder's, it is not inexorably demanded by public policy that the treatment of his claim should be the same.

5. It does not follow, because "the most important function of the national banks is that of an acting middleman (*sic*) between the depositors and borrowers of a community" that "its note issuing functions are secondary in importance and usefulness under the present or any proposed system of bank-note issues." The relative importance of the functions of the national banks, the country over, is in part only a product of natural orderly development, in part a result of the imperfections of the law. The national banking system was first called into being, let us remember, by "An Act to provide a National Currency, secured by the Pledge of United States Stocks and to provide for the Circulation and Redemption thereof." Neither in the original legislation nor the present bank act is it expressly stated that the comptroller is peculiarly charged wiih the protection of bank depositors.

If the national banks no longer provide a national currency in the sense originally intended, if their note circulation is but little more than the half of what it was twenty-five years ago, the shrinkage must be ascribed, not to a failure of function, but to the defects of issues secured by bonds, and to the unwillingness of Congress to change an antiquated system of regulation for one that would be better adapted to the times. That the volume of bank-note transactions has diminished, while every other item of the bank balances shows increase, in nowise indicates that the possibilities of issue, were issue on a rational basis permissible, have been rapidly dwindling away. Nor does a comparison of the present volume of deposits with the quantity of notes outstanding, afford a final demonstration of the superior importance of the function of deposit over that of issue In so far, in fact, as notes and checks are not or may not be interchangeably used, the importance of the two

functions ought not to be compared. The ends which they serve are distinct. Persons in one part of the country place their chief reliance upon the deposit currency; those in another, on media which pass by delivery alone, notes in short, or coin. By acknowledging in another connection that the deposit currency is not adequate to business needs in times of disturbed confidence and financial panic, the comptroller practically concedes the whole case.

6. There is reason to believe, that, whatever the new burdens imposed upon any class of depositors by the proposed preference of note holders, they will yet be able to survive. A detailed examination of the comptroller's statistical investigations must be reserved for another time. Meanwhile, however, it is interesting to note, from the comptroller's own tables, that the additional loss which would have been borne by the depositors of insolvent banks in the western states, the affairs of which had been finally closed — had the note holders enjoyed a prior lien against general assets only during the last thirty-three years, and had the note issue of banks amounted to 80 per cent. of their capital stock — is $1,719,031, or about $57,301 per annum more than the average loss, under the existing system, of $45,248 per annum on deposits reported last October at $100,865, 549. In other words the customer of the national bank in the western states would have been subjected to an added risk about equivalent to $\frac{6}{100}$ of 1 per cent. per year on the whole amount of his deposit. The chances of his losing his money within the twelvemonth would have been raised to something like one in a thousand. It is upon this class of depositors — the comptroller finds — that the real burden of the preference "will fall with almost crushing weight."

In the light of these figures, currency reformers confronted by the proposition that "in those communities in which bank depositors have already sustained the greatest percentage of losses, they are to be subjected to still greater losses" will probably still be able to preserve a moderate degree of equanimity. Even the prophecy that "the large city banks would gradually receive a larger proportion of the deposits of the country, as the increased percentage of loss to depositors of smaller banks was perceived by the general public," or the assertion that "one of the purposes of the proposed laws, which is to enlarge the circulation in those districts where it is now scanty, would be thwarted by the ultimate effect of the laws in decreasing in rural communities the deposits," is hardly calculated to overwhelm the advo-

cates of the changes with misgivings, or to convince fair-minded men that the present system should be retained.

7. How far the comptroller is justified in his alarm about the tendencies of centralization, which his tables have led him to believe are peculiar to issue upon business assets, the casual critic of these statistics can best decide for himself. It must be acknowledged, nevertheless, that it would have been interesting to learn whence so ardent an opponent of such tendencies obtained his brief, and how, with due respect to that "general business individualism" which the comptroller is apparently anxious to preserve, it will be possible to crush such tendencies out.

8. In criticising other aspects of the proposals, the comptroller has too often resorted to phrases rather than facts. In one passage, for example, there is mention of "the possibility of unusual losses in general bank assets through an inflation of the currency and resultant speculation brought about by an abnormal increase in the number of national banks." But there is no explanation of the manner in which, under the careful systems of redemption provided, the bank note circulation can thus be kept above the amounts which the business of the country requires, nor is there any description of the process by which gold exports will be prevented whenever the increase of circulating media suffices to raise the price of exchange to the point where gold can be profitably shipped. Further on, the comptroller refers to England, Germany, France, and other European nations, with their "few great state banks, and centralized business," in utter disregard of the fact that if an institution like the Imperial bank of Germany has no less than 260 establishments, in almost as many different localities, its management may be centralized, but its business certainly is not. A like indifference to essential considerations is suggested by the allusion to the Canadian banks, as "those few central institutions of eastern Canada." How well such phrases are calculated to mislead is only apparent, of course, when one remembers that the Canadian banks maintain over six hundred different places of business, and that more than two hundred of these establishments are in other provinces than Ontario and Quebec. No less than ninety, in fact, are in such thinly settled regions as Manitoba, the Northwest Territories, and British Columbia. On the whole, it is preferable to suppose that these are data of which the comptroller was not informed. As conscious misrepresentations designed to controvert the arguments drawn by cur-

rency reformers from the experience of other nations, they are neither effective, frank, nor fair.

Taken as they stand, however, their value as criticisms of the proposed revision of issue regulations is no less questionable than that of the other objections here reviewed. Exactly what shape a measure of currency reform shall be given, is still a question for debate. It is possible, indeed, that the holders of notes issued against general assets would not need the added safeguard of a prior lien — that their interests would be amply protected by a safety fund alone. But for any consideration which the Comptroller of the Currency has urged against the proposed combination of these devices, the project need not be condemned.

III.

In another passage of his Report the comptroller criticises the proposal to legalize domestic branch banking in towns of more than 2000 inhabitants. In towns of less than 2000 population, on the other hand, he recommends that domestic branch banking be permitted. "This," it is said, "would afford some smaller communities banking privileges which are now without them, but would not interfere materially with the scope of the work now so well performed by the existing banks of the smaller communities." National bankers will doubtless be pleased by so cordial an expression of approval from so high a source, but the value of the commendation is considerably lessened by what is practically a concession that a general opening of branches would interfere with their work. If the work of national banks in the several business communities of the United States were really well performed, it is hard to see what disturbance it would suffer from the introduction of branches. But if the independent local bank is not the most efficient intermediary between borrowers and lenders; if it is not the best device for facilitating, among other things, the flow of circulating capital between the persons and places of a country, there is no reason, either in public policy or the moral law, why the present inhibition of other devices should be retained.

As a matter of fact, the independent local bank is nothing of the sort, or the proposal that branches should be permitted would not be regarded by local bankers as sufficient cause for alarm. To say nothing of lesser communities, the existing lack of uniformity of interest rates among the more important money markets of the United States, constitutes what other advanced commercial nations would consider an

anomaly of the most injurious and objectionable type. Worse than that, however, it is an anomaly the origin of which is directly traceable, not to the normal operation of economic forces, but to a legal restriction, the necessity for which has long since disappeared.

The comptroller avers that the arguments for branch banking are mainly based upon the "theory" that if this practice were permitted, something more like a uniformity of rates could be brought about. A theory, indeed, it well may be, but in contrast with some of the comptroller's own, it has been based on a wide and careful observation of actual credit conditions. What the effect of branch banking will be in the United States is still, in the scarcity of material upon our early experience, a question for scientific prevision, for theorizing, if you please; but what it is and has been elsewhere, is already positively known. Scotland provides one example of its workings, England another, Germony a third, France a fourth, and Canada still a fifth. If a substantial uniformity in the rate of interest, extending to hundreds of widely separated markets, has been established in each of these countries by means of branch banking, the "theory" that like results will follow the sanction of this device by the United States is entitled to some respect.

"But," the comptroller argues, "[the consequences of branch banking privileges] would be injurious to the best interests of our country." Would that process to which he is so opposed, "the centralization of the banking business of the country in the hands of a constantly lessening number of institutions," occur as a mere iniquitous manifestation of corporate perversity, or because the large bank with branches is a better servant of its communities than an equal number of small banks, each working by itself? The "system would increase the difficulties in the way of the small borrower." But how? Is the small borrower who offers good security the less able to borrow of a branch bank than of an institution active only in the local field? Where is the evidence by which so sweeping a generalization may be proved? How is the borrower to be unduly separated from the lender under a system of branch banking, when the manifest interest of banks in the wealthy accumulating districts will be to place their representatives at every point in enterprising, borrowing communities where funds are in active demand? If a branch manager has every incentive correctly to report the local conditions of credit to his principals, and if they have no motive to overrule his judgment except when the bounds of prudence would be by him transgressed, how injurious is a

certain subordination of agents' activities to system likely to be? Where, finally, outside the comptroller's own imagination, have these interesting and obnoxious consequences of branch banking been observed?

It ought not to be forgotten that individual attention and accommodation are not the only things which customers of limited business can rightly demand from their banks. If capital is not lent as cheaply by "competing, smaller banks" to such customers, as branch banks elsewhere lend in communities otherwise similarly situated, the interests of these customers are not "now well subserved." The comptroller's bald assertion to the contrary can nowise change the case. A commonplace to the effect that "interest rates are not alone dependent upon local money supply" does not mitigate the relative disadvantage under which borrowers in all but a few of the largest American cities long have worked. Those excessive discount charges for which the remedy of branch banking has been proposed, have been exacted upon securities which would everywhere be reckoned among the best. No one pretends that "branch banks in newer communities would . . . . assume unusual risks, without unusual rates." But it is argued that they would assume a usual risk at something less than the usual local rates for the sake of attracting accounts. An enterprising bank will strive to obtain its resources through branches opened at the cheapest sources of supply and to lend them out in sections where higher rates prevail. It will have to meet active rivals in exploiting these opportunities, and through the competition of other branches the higher rates will inevitably be reduced.

According to the comptroller, nevertheless, the importance and usefulness of such a reform is incommensurate with the risks. In a method of bank organization which has elsewhere promoted equalization of discount rates, diffusion of loanable capital, and widespread extension of banking facilities, he discovers tendencies the effect of which would be the rapid concentration of American banking resources into the largest centers of trade. Just why, or how, such consequences are likely to follow, is nowhere satisfactorily explained. The details have been passed over, perhaps, the sooner to reach the conclusion: "When the economic tendencies adverse to business individualism involved in unlimited domestic branch banking are considered, the question of interest rates becomes secondary."

Here, however, any serious discussion of the comptroller's contentions might very properly cease. "Business individualism" is one of those lofty expressions which once in a while mean much, but more frequently nothing at all. Granted that the phrase is intended for something more than an appeal to ill-conceived prejudice, vaguely defined, what does it really imply? If non-interference of government, or the policy of *laisser-faire*, why forbid the banks to establish those branches, the conduct of which, as events have already proved, they would gladly undertake? If free competition, why withhold from borrowers in the southern, central and western markets the beneficent competition of lenders from the North and the East?

R. M. BRECKENRIDGE.

NEW YORK.

DR. STEPHAN BAUER, of Brüun, Austria, editor of the *Zeitschrift für Socialund Wirthschaftsgeschichte*, is engaged to lecture on the history of economics at the University of Chicago during the coming summer quarter. The engagement is incidental to a visit which Dr. Bauer is making to this country to study the later industrial development.

BOOK REVIEWS.

Les impôts en Suisse, assiette, quotité, mesures d'exécution. Étude de droit public comparé et d'économie nationale. Par MAX DE CÉRENVILLE, Docteur en droit. Lausanne and Paris: Cerbas et Cie., 1899, 8vo. pp. 240, with 26 tables.

HE is a bold man who dares to follow Professor Schanz's monumental work on taxation in Switzerland with another treatise on the same subject. Yet the work before us is unquestionably a success. It is brief, yet fairly comprehensive, is well arranged for use as a book of ready reference, and is interestingly written. Students of finance will find the book of great practical value.

The author is a jurist, and studies taxation mainly from the legal point of view. His references to the economic principles involved are frequently crude, and the works on taxation to which he most frequently refers are, for the most part, antiquated. Thus the reader will be somewhat startled to find Thiers's view that "the indirect tax is the tax of countries advanced in civilization, while the direct tax is that of barbarous countries," quoted with approval, and the effort made to adduce some evidence to show that the statement is true. The author finds that in the agricultural cantons by far the larger part of the revenues are obtained from direct taxes, while in the cantons which inclose large cities, indirect taxes afford the largest proportion of the revenue. This fact, which simply illustrates the weakness of democracy where the population is composed of persons differing largely in wealth, is cited as sustaining Thiers's view. But, nevertheless, the author concludes, quite correctly, that "it is merely a matter of fiscal policy." However, as the work is written mainly from a legal point of view, and the economic discussions form but a very subordinate part, we cannot consider the failure to apply modern economic principles a serious fault.

The book is divided into three parts. The first part deals with federal taxes, the second with cantonal taxes, and the third with communal taxes. The first and third are very brief, scarcely more being attempted than to show the relation between the cantonal burdens and

the others. The author apologizes for this incompleteness by stating that it was his intention to study only the cantonal system.

The occasion for a new work on this subject is found: (1) in the vast increase in the expenditures by all parts of the government during the past decade; (2) in the fact that since the appearance of the five volumes by Schanz, in 1890, many of the cantons have revised their systems of taxation. In the augmentation of public expenses the simple Swiss have little advantage over the people of other countries. During the past ten years the expenses of the canton Vaud increased 33 per cent., of Geneva 44 per cent., of Basel City 57 per cent., and of Zurich 91 per cent.; and a large part of this increase has been met by increased taxation. In the course of the last eight years, since Schanz's book appeared, nine cantons have completely revised their revenue laws, four have made fundamental modifications, while at the present time six more are about to make extensive revisions. M. de Cérenville has done us a real service in making these changes known to us.

The position and powers of a Swiss canton in the matter of taxation are so nearly analogous to those of one of our American commonwealths that their experience is interesting for purposes of comparison. It should be remembered, however, in all such comparisons that many of the Swiss cantons are very small, and that this may so alter the conditions as to make it unsafe to draw conclusions from the comparisons. They have, of course, encountered many of the same difficulties with which we are familiar; but the Swiss have succeeded in some instances in overcoming them rather better than we have. The property tax (*l'impôt sur le capital*) is retained in some form in each of the twenty-five members of the federation. The difficulties of intercantonal double taxation have been solved by the decision of the federal tribunal which in the matter of taxation exercises wider powers than those assumed by our federal supreme court. It has been decided that immovable property is to be taxed where it is situated, movable property at the residence of the contributor. The difficulties in assessing personal property have led to innumerable exemptions and to the adoption of various devices which are so manifold as to defy classification. Our author does not furnish us with the information necessary to determine whether these devices are more effective than our own. The treatment of debts and credits, especially of mortgages, under the property tax is by no means uniform. In the matter of

mortgages there are two principal systems. In the first no deduction is allowed for the mortgage, and the entire tax is paid by the owner. There are some modifications of this, as, in Appenzell, where the debtor is allowed to deduct the proper proportion of the total tax from the interest he pays. Most of the cantons, however, follow the second system, in which the mortgage is deducted from the assessment of the owner, and assessed either as the real or the personal property of the mortgagee.

But the property tax is only a part of the main tax system of the cantons. Most of them supplement it by a more or less complete tax on incomes. The various forms of the income tax in use, the experiments tried, the exemptions granted, and the adjustments found necessary, in order to make the two parts of the system work smoothly together, form a very interesting chapter. The rates of both the property tax and the income tax are frequently progressive, and for property tax taken by itself are very moderate, rarely reaching 5‰. There is a brief but lively discussion of the practical results of progressive taxation. The author feels that it is not possible to exaggerate the dangerous possibilities which lurk in progressive taxation, but he admits that these dangers are rather a menace to the future than to the present. In the end he agrees with Martello (*L'imposta progressiva*) that the experience of the little Swiss cantons is scarcely likely to throw much light on the probable operation of progressive taxation in larger states.

We can only enumerate the other taxes, all of which are fully and clearly explained in the book. In six cantons there are poll taxes; in eighteen, succession taxes; in eight there are heavy taxes on the transfer of real estate; among the many indirect taxes the most important are inn-keepers' and peddlers' licenses.

At the end of the book, arranged in a series of tables, is a helpful analysis of the property tax and the income-tax laws of each canton, and of the most important municipalities. The general arrangement of the book cannot be too highly commended. Although it embraces the numerous details of a most complex system of taxation in each of twenty-five cantons, and although it is without an index, yet so logical is the analysis, and so compact the presentation, that it is possible to turn at once to any subject desired. This will make it of great value as a book of reference.

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The Science of Finance: An Investigation of Public Expenditures and Public Revenues. By HENRY CARTER ADAMS, Professor of Political Economy and Finance at the University of Michigan. New York: Henry Holt & Co., 1898. 8vo. pp. xiii + 572.

TO PROFESSOR HENRY ADAMS belongs the distinction of being the first among American writers to have completed a treatise of adequate compass covering the whole field of public finance, in the scientific use of that term. This much may be said without any disparagement of the notable achievements of other American investigators in the same field. Plehn's *Introduction*,[1] which came a few years ago, whatever its undoubted merits, was quite too brief to allow a satisfactory treatment of many subjects properly belonging even in a first book on the science of finance. And Seligman's scholarly essays and monographs, which have done so much to promote this department of study, have not yet extended beyond selected topics in the theory and history of taxation. But Professor Adams's book is not distinguished by priority and comprehensiveness alone, it is altogether an admirable piece of work. It is marked by a breadth and modernness of view, and by a unity of structure, such as make it in many ways superior to its British competitor. For Bastable's book, invaluable as the service it has rendered during the past eight years, is defective in one or two fundamental requisites — above all, in point of view. Mr. Adams does not speak unjustly of Bastable when he says of his book that "it fails to impress upon the student that sense of solidarity which alone may be urged as an apology for an independent treatment of financial questions" (p. 287). A careful comparison of the two shows that Adams has, and that Bastable has not, sufficiently shaken himself loose from the traditional position of classical political economy, to see the facts of finance as they must be seen if they are to be set forth in their true relations. The science of finance requires a larger social philosophy than Bastable brought to his task. Indeed, the conviction that a study of English financial literature seems to enforce is that finance must be divorced from political economy if its cultivation is to be made most fruitful. The notion of a collective interest, something other than a mere aggregate of private interests, and requiring for its furtherance and support the collective agency of the state, in brief, the concept of

[1] Noticed in this JOURNAL, March 1897, p. 264.

public economy, is the first datum of public finance. As Wagner has defined it, "Finance is the study of the *public* economy;" and this fairly well represents Professor Adams's position, too, though he has carefully noted its limitations. A passage (p. 53) in which he states his theory of public expenditures, shows this.

> The situation seems to be that the older English writers did not need a theory of expenditures because the theory of government which they held implied a fixed limit to governmental functions; while the earlier German economists could not work out a satisfactory theory respecting the public use of money, because their theory of government presented too strong a presumption in favor of the state. As is so frequently the case, the truth respecting public expenditures lies between these extremes, and can only be discovered by the concurrent study of public and of private functions. A theory of public expenditures must be a theory of the evolution of the collective wants of individuals, and its further development necessitates an analysis of the governmental functions, not alone as they now are, but as they have developed.

So much for the author's point of view, which is consistently reflected throughout the different portions of his treatise, showing that he has thought it out as one connected whole. The 572 pages of the work are divided into three parts, dealing respectively with "Public Expenditures," "Public Revenue," and "Public Credit"—the last part containing most of the substance of the author's well-known essay on *Public Debts*. Budgets and budgetary legislation are treated in connection with expenditures.

The theory of public expenditures is treated briefly, but with great skill, and shows the writer at his best. He avoids perplexing statistical details on the one hand and commonplace generalization on the other. The problem of this part of financial science is stated to be "a theory of adjustments and apportionments—meaning by adjustment the assignment of a certain portion of the social income to expenditures through the agency of the state, and by apportionment, the assignment of the amount thus set aside between the various lines of public service." Rapid as has been the augmentation of public expenditures in this century, the striking fact is, as brought out by Mr. Adams, that they have not increased at so rapid a rate as property and income. The percentage of expenditures to property was one fourth greater in the United States in 1850 than in 1890. There has, however, been, in all the leading countries, a notable change in the distribution of the

aggregate expenditures among the different branches of government and among its different functions. Local expenditures have gained on national 25 per cent. in the United States from 1850 to 1890. Again, the developmental functions of government (of which public education is the most striking example) have occasioned increasing expenditures, while the protective functions "exhibit a tendency to decrease in proportion as the protective service of the state succeeds." "It is the social ideals rather than the social necessities that are coming to determine the amount of money placed at the disposal of the state" (p. 102). In harmony with these facts and this view, we are prepared for the author's conclusion that "the burden of the fiscal system lies rather in the rules adopted for collecting revenue than in the amount of revenue collected" (p. 94).

Turning, then, to Professor Adams's discussion of public revenue one finds much with which it is a pleasure to agree, but also something to criticise. Only a few points can be touched here. Public revenues are classified along the general lines proposed by Professor Seligman a few years ago, with some differences of terminology and detail. In place of the terms "contractual" and "compulsory," which Seligman appears to have adopted from Wagner, Adams follows Italian usage and takes the terms "direct" and "derivative," to designate the two great groups of public revenue. In the former classification the element of coercion is made the basis of distinction, in the latter the element of origin. The latter set of terms seems to be preferable because more descriptive of essential and lasting features, but Professor Adams's manner of stating, or, at any rate, of applying, his distinction reveals some difficulties. "Direct revenue constitutes a positive addition to the social income, while derivative revenue," we are told, "although it augments the income of the state, is in reality a transfer of a part of the earnings of the citizens to the state" (p. 220). Where, it may be asked, does the revenue of a state monopoly, like the tobacco monopoly of France, belong? Professor Adams classes it with direct revenue, although it can hardly be maintained that a fiscal monopoly that yields a return at the rate of 400 per cent. on operating expenses does not cut into the income of the community. The fact is that we have here a composite revenue, partly direct, but for the most part, derivative and not distinguishable in essence from taxation. The monopoly is simply a method of taxing, adopted because of its superior effectiveness for collecting a tax at an extraordinarily high rate. To say, as

Professor Adams does, that such payments include no element of taxation because "the purchaser may, if he choose, forego the purchase, and so be free from the payment," is to mistake both the character of derivative revenue and the nature of the coercion in taxation. On that ground we would be obliged to exclude the whole category of indirect taxes on consumption from taxation, because it is at the option of the individual to take or to leave the taxed commodity, and, therefore, to pay or avoid the tax. So far as the nature of the revenue is concerned, it makes no difference whether it comes in the shape of "profits" accruing from a government industry or of taxes imposed upon private industry. It partakes in either case of the character of derivative revenue. Hoffmann stated the correct attitude for the science of finance on this question sixty years ago when he said that, "under the constitution of the modern state, there is no longer any reason for regarding contributions toward the public expenses as of a nature different from other taxes simply because the government secures their payment by reserving to itself exclusively the trade in the commodities on which the tax is levied"—a position with which such leading German authorities as Wagner, Stein, Cohn, and Scheel, are in complete agreement. On this point Professor Adams has taken a backward step.

He has, however, taken a forward step, in advance of Seligman and others, in dropping the term "*quasi*-private price" from the vocabulary of finance, and with it the whole circle of mediæval ideas that it suggests. The state, in the renovated political science of our day, has no private interest; it is the embodiment of the public interest, and its charges are always (constructively at least) determined in view of public advantage, not of private profit. "It may be," as Professor Adams allows, "that, incidentally, the same charge will be made by government aiming to secure social utility as would be the case if the industry were administered upon a competitive basis; but the process of getting at the charge is so different in the two cases that one is justified in asserting that the charges themselves stand for essentially different concepts and represent essentially different social forces" (p. 231).

Passing to the author's treatment of taxes and noting his method of classifying them, it may be questioned whether he has not departed too widely from accepted ways of thinking. He establishes three groups: taxes on income, taxes on property as the source of income, taxes on business as a means of securing an income—each with its subclasses. The most striking thing in this scheme is the omission of

the familiar group of taxes on consumption. "There are no such taxes," says Professor Adams. "Taxes usually called taxes on consumption," he continues, "are either 'criterion taxes,' which are in reality taxes on income, or they are 'excise' or 'import' duties, which are clearly business taxes. All taxes affect consumption" (p. 356). Without stopping to question the propriety of stretching the term business taxes so as to include excise and import duties (in the levy of which, generally speaking, no note is taken of the condition, importance, or profitableness of the particular business as such), and, granting that all taxes affect consumption, what necessity can be deduced from this for rejecting these taxes which peculiarly affect consumption, especially in a scheme which professes to pay particular attention to the "psychology of different methods of attacking income"? Is it not equally true that all taxes affect income? Yet it is not proposed to drop taxes on income. In a sense, every tax is an income tax, so far as income is the normal source of all taxation, but no one, for that reason, mistakes what is meant by taxes on income. Consumption and income are, indeed, opposite faces of the same fact, but it makes considerable difference in the psychology of taxation on which side the approach is made.

Classification in taxation is largely a matter of arbitrary choice; there is no discoverable natural principle of division. Taxes have been classified according to the source whence the tax is paid; they have been classified according to the object or basis on which the tax is assessed; again, according to the relation sustained by the tax object to the tax source; and, fourthly, to go no further, according to the real or supposed incidence of the tax. All of these have something in common, but the third is the one which has commended itself in increasing degree to scientific judgment, because of its fitness to show the relations of different parts of the tax system and the complementary functions to be performed by the several kinds of taxes. And under any such classification conspicuous note will have to be taken of consumption. The fact is that consumption is too suggestive a fact to be capable of elimination. The pages of Professor Adams's own treatise give abundant evidence of that. "The consumer pays the tax;" "the incidence of indirect taxes rests with the consumer of goods," etc. (p. 391).

But there are deeper reasons than these for the retention of the significant expression consumption in the theory of taxation. More

than a question of formal classification is at stake. Consumption is a criterion in a more extensive and fundamental sense than Professor Adams perceives. It is a criterion not merely of income, but of faculty or contributive capacity as well. Our author espouses the faculty theory of taxation, but with a quite inadequate appreciation of what is implied by "faculty." He adopts the conventional view that faculty is measured by income, and quotes Cohn in approval of his position. But Cohn has certainly been at pains to show that income is, at best, only a partial measure of faculty. "The inflexible standard," says he (*Science of Finance*, pp. 379 and 577), "afforded by the amount of the income alone gives no information as to the individual's tax-paying capacity, this latter depending on the peculiar conditions of his life. The problem consists not alone in ascertaining the amount of the income, but also in finding the relation between the income and the aggregate necessary expenditure of each taxpayer." "Defects inherent in the nature of the tax [on income] are due to the fact that the method of ascertaining them necessarily applies too inflexible a standard in measuring the tax-paying capacity, and so makes a more flexible, subsidiary standard desirable. These defects plainly point to the taxes on consumption as well adapted to supplement and correct them." In brief, not only what a man earns, but what he can afford to spend, is the standard by which to measure his faculty. Consumption, as well as income, is a factor to be seriously reckoned with in the equities of taxation, no less than in the technique of taxation.

Attention may also be called in this connection to Professor Adams's latitudinarian interpretation of the term income, when he construes the inheritance tax as "a tax on revenue" (p. 361). This method of construing it is, indeed, in fashion with a certain class of writers, who seem to feel themselves under the necessity of reconciling the popular demand for inheritance taxation with the formula of "taxation in proportion to income," before they can accede to the demand. But no mere fiction of language can ever make income out of that which is economically property or capital. If, as the familiar and truthful figure has long described it, property is the tree which annually bears the fruits, and income is the fruit; then we must, perforce, agree with Cohn (*Science of Finance*, p. 357) when he says of the inheritance tax: "It is, in fact, a true property tax," and "hard to reconcile with any theory which condemns the taxation of property as a source of tax payment." The inheritance tax must be justified as, what

it is, a tax on property, without distorting or abusing one of the most precious terms of our science.

No notice of Professor Adams's treatise would be fair that did not call attention to his lucid and interesting chapters on the budget — there is nothing better on this subject in the English language — and to his repeated references to American financial conditions and needs. He has embodied, in a special chapter devoted to the purpose, his suggestions for the reform of the American revenue system, federal, state, and local. On the other hand, it must be regarded a most serious defect of his treatise that so little mention should be made of the revenue systems of the leading European countries. There is a real dearth of matter touching the history and present condition of taxation, such as will seriously limit the instructional value of the work. It is in this regard distinctly inferior to Bastable's book, where the theoretical analysis was well supported by a special book given over to the detailed discussion of the several kinds of taxes. This is equivalent to saying that Adams's work is too theoretical, or, rather that his analyses are too frequently undertaken without presentation of the facts and circumstances to be considered. The office of the science of finance is in a special sense interpretative: to assemble the facts of experience; to interpret these in the light of reason, judgment, and ideals; to extract the deliverances of history; and, on the basis of all this, to point the course of future development — this is the mission of the science.

A. C. MILLER.

La Réforme Monétaire de la Russie. Par ETEOCLE LORINI. (Traduction Française par RAPHAEL LEDOS DE BEAUFORT). Paris: V. Giard & E. Brière, 1898. 8vo, pp. xiii+244.

La Réforme Monétaire de la Russie is an account of Russia's effort to improve her monetary system, and is the result of a mission to Russia undertaken by Professor Lorini under orders from Sig. Luzzatti of the Italian Treasury Department. It is thus an official report and the interest now generally felt as to the outcome of the measures taken by Russia has led to the immediate translation of the book into French.

Professor Lorini has paid little attention to the early history of Russian monetary policy. He scarcely discusses any event dating farther back than 1873, while the history of the twenty years succeeding that date is sketched only in the most general terms. "The

essay," says he, "should not exceed the limits of the problem immediately in hand." The "end in view is purely scientific and objective." In this scientific and non-partisan spirit Professor Lorini takes up the cudgels in good earnest on the side of those who have set on foot the recent measures. Some space is devoted to a discussion of the opinions of opponents which he describes as founded upon "paltry mercantilist notions," "exaggerated Chauvinism" "false calculations based on egotistic individualism," etc. This study of motives leads to an analysis of the policies at the bottom of the measures taken between 1893 and 1897; and in chapters III. and IV. the leading monetary facts of the period are discussed at some length. These, however, are familiar and need not here be recalled. Of more interest is chapter V., which treats of the "fundamental considerations upon which the reform is based" and in which it is sought to justify the transference of the metallic standard from silver to gold. It will be recalled that M. de Witte, the present minister of finance, in announcing a return to specie payments adopted gold as the money of redemption and established arbitrarily an equivalence between gold and the irredeemable paper at the ratio of 1 : 1.50. This ratio represented very nearly what has been the average quotation of the paper in terms of gold for some years past. It was, then, upon these two simple principles—substitution of the gold for the silver standard and adoption of a definite equivalence (less than par) for the paper currency—that the whole operation has been carried out; and it is these principles which Professor Lorini seeks to discuss. The reasons for preferring gold to silver are the same with Russia as with the other countries of the world, and the author's exposition of them need not, therefore, be recapitulated. The selection of the ratio of equivalence requires more attention. There has been much criticism of the action of Russia in thus offering to redeem her paper at two thirds of its face value and Russian statesmen have been accused of adopting a policy of debt evasion. The author is anxious to clear the administration of these aspersions upon its financial honor. After pointing out that the original money of the empire was silver and that the government notes were issued at a time when if redeemable at all they would have been redeemable in silver coin, he argues that they therefore represented a definite amount or volume of silver *bullion*. Hence, if it be decided to redeem in gold rather than silver it is manifestly fair to pay such an amount of gold as would purchase the quantity of silver which the note originally "represented."

This and more than this has been done in the offer of one ruble of gold for every one and one-half rubles in paper. Thus there could be no possible injustice in redeeming at the rate offered. While, however, Professor Lorini's conclusion may be fully accepted, it is impossible to accept the reasoning upon which it is based. It would, for example, be highly absurd to redeem one dollar of our own "greenbacks" in a silver dollar or in a quantity of gold just sufficient to purchase the bullion contained in a silver dollar. Yet this is precisely the reasoning which the author has applied to the case of the Russian rouble. As a matter of history, the paper did not "represent" silver bullion at all. This is shown by the fact which Professor Lorini seems entirely to neglect, that the quotation of the paper ruble rose above that of the silver contained in a silver ruble as early as 1891 before the new projects had taken any definite form whatever. Practically, silver had for a long time dropped completely out of sight. The paper ruble was to all intents the actual monetary unit of the country and was regarded as a promise to pay gold at some indefinite date in the future. The establishment of the equivalence therefore was merely the acceptation of the discounted value of the ruble at the rate which had been established in open market.

Passing by several slips like the foregoing, it is interesting to note in chapter VI the author's views on the existing reserve and the outlook for the future. At this point, after a detailed statement of the gold on hand, he reverts to controversialism. There are, says he, two kinds of doubt currently expressed: (1) Is the gold really on hand? and, (2) if so, how has Russia been able to make such an accumulation? The discussion of the latter point is interesting although far from novel. Professor Lorini points (*a*) to the large domestic production of gold, (*b*) to the recent large gold loans floated abroad, (*c*) to the fact that gold has for some time been required in payment of customs, and (*d*) to the peculiarly fortunate situation of foreign trade and of the budget which, as was the case with Secretary Sherman of the United States Treasury in 1878, have materially assisted the finance minister in acquiring the reserve. The argument on these points seems to be conclusive as to the possibility that the gold may be actually on hand. Faith however is considerably shaken by the jaunty way in which the author resolves the doubts of those who question the truth of the Russian government reports regarding the reserve. He declares that he has himself visited the vaults of the treasury and has "seen" the acccu-

mulations to be found there. A more naïve statement could scarcely have been imagined.

The prospect for the future is regarded as excellent if only the present administration continue at the helm. M. de Witte, the author of the reform, is described as a true patriot working only for his country's good and manipulating economic events to suit his needs with wonderful skill. The only difficulty in the way, thinks Professor Lorini, lies in a certain troublesome "law," formulated by one Ricardo, concerning the territorial distribution of the precious metals, but let this vicious principle be once "overcome" and all will be well. The book closes with the discussion of future prospects just outlined. An appendix gives a reprint of some documents and a statistical résumé, as well as an apparently thorough bibliographical essay.

In general it is fair to say that Professor Lorini has thrown little new light upon the Russian monetary reforms. Of the historical evolution of the existing situation he has said nothing and his treatment of current problems is at once confusing to those unacquainted with the subject and useless to any who have made a careful study of it. The work is an obscure and controversial tract where, to judge from the exceptional opportunities the author must have enjoyed, a worthy discussion might have been expected.

H. PARKER WILLIS.

L'achèvement et l'application de la réforme monétaire de la Russie. Par R. LEDOS DE BEAUFORT. Paris: V. Giard & E. Brière, 1899. 8vo. pp. iv + 43, with 1 plate.

M. DE BEAUFORT has supplemented his translation of Lorini's *La Réforme Monétaire de la Russie* by the present pamphlet, in which he undertakes to give a review of the monetary operations of the Russian Treasury, from the opening of 1897 to the middle of 1898. The monograph is largely made up of extracts from the report of M. de Witte, the Minister of the Russian Treasury, and from the *Bulletin Russe de Statistique et de Législation Financière*, and is therefore a collection of some important bits of material in convenient form rather than an original production.

It will be recalled that the opening of the year 1897 found the Russian Treasury with a large supply of gold and that by the royal order of the 3d of January 1897, an equivalence between gold and the

paper currency at the ratio of 1 : 1.50 was established. Paper was to be redeemed in gold, at this rate, upon demand both at government railway offices and elsewhere; while a new coinage of gold pieces was to begin at once. The next important step was taken some eight months later when the order of August 29, 1897, prescribed that the notes of the Bank of Russia should thenceforward be issued only "to an amount strictly limited by the urgent needs of the money market." In no case should the volume of notes in circulation be more than twice as great as the stock of gold on hand; and for all amounts of notes in excess of 600 million rubles it was ordered that an equivalent amount of gold should be kept in the vaults of the bank. In other words, not more than 300 millions of uncovered notes were allowed to be outstanding.

It now remained to remove the last suspicion concerning the gold redemption of the notes. By the decree of November 14, 1897, it was ordered that the equivalence of the notes to gold be indicated upon their face and that the resources of the state be pledged to their maintenance at par. Thus the last bond of connection between the paper currency and the old silver ruble was finally broken. There was still, however, the problem of providing a system of metallic "large change." Although the creation of a gold five-ruble piece (worth about $2.66) had been authorized by the order of November 14, 1897, small transactions must still be effected upon a paper basis; for silver, it will be remembered, had disappeared early in the dreary history of the depreciated currency. This lack of small coin was remedied by the order of March 27, 1898, which established a silver circulation not to exceed in amount a number of rubles, equal to thrice the number of the population; coined on state account; of various low denominations; receivable by individuals in amounts not exceeding twenty-five rubles and by the public treasuries in any amount. In the case of customs duties only was the amount of silver payable to the government limited to five rubles at any one payment. Thus Russia is to be provided with a circulation of gold of denominations not less than five rubles — the field of the smaller transactions being given up to silver coins of denominations not exceeding one ruble (worth about fifty-six cents in gold). Other measures tending to confirm the public credit have been taken and the conduct of the affairs of the State Bank has been carefully prescribed.

The situation of the currency at the opening of 1898 may be summed up as follows:

	(Millions of rubles)
Notes outstanding,	999
Notes in bank,	97.8
Net notes outstanding,	901.2
Gold reserve of bank and treasury,	1315
Percentage of reserve to circulation, 131.6 per cent.	
Gold in circulation,	147.8
Silver in circulation,	78.6

Since the beginning of 1898 the gold and silver in circulation have increased to 245.7 and 93.6 millions, respectively.

M. de Beaufort's pamphlet is a useful collection of material. The reader is inclined to wish that the author had given us a similar work of his own upon the earlier stages of the Russian reforms rather than a translation of Professor Lorini's Italianesque production.

H. P. W.

Norman's Universal Cambist. A Ready Reckoner of the World's Foreign and Colonial Exchanges of Seven Monetary and Currency Intermediaries. By JOHN HENRY NORMAN. London: Effingham Wilson, 1897. 8vo. pp. xxix + 264.

The World's Exchanges in 1898. A Reckoner of Foreign and Colonial Exchanges. By the same. London: 1898. 8vo. iv + 54.

IT would be unfair to *The Universal Cambist* to disparage it by comparison with Haupt's *Arbitrages et parités,* since the author does not attempt to rival that more comprehensive treatise, but essays merely a simple, practical work, setting forth the facts in the plainest possible way, adapted to the "instruction of boys and girls" in the mysteries and complexities of the exchanges; a work designed as a guide to travelers, and a desk companion to everyone having foreign business connections.

In estimating the author's success, therefore, it is sufficient to examine how far the book fulfills this prospectus, waiving as immaterial any discussion of the author's excursions into the broader field of monetary theory, although he himself recommends—in a red-typed insert—these digressions as of especial importance. Similarly, high praise

might fairly be given to a set of exchange tables such as this, without questioning whether the English, in another place, would seem bungling in its phraseology, and tiresome from much repetition.

The book is divided into two parts, the first being descriptive, and, at times, theoretical, the second consisting of various tables, and a minute account of twenty-five monetary systems. The second part seems more important, and the information gathered here is comprehensive and conveniently arranged. Conversion tables are given, showing the value of the monetary unit of each country expressed in decimals of the monetary unit of each other country, and additional tables give these expressions for each multiple from 1 to 9, thus facilitating the conversion of one money into terms of another.

The method employed by the author is at once compact and ingenious. The weight of the pure metal in the coins is compared. This, in the case of two countries with the same standard, is a simple matter, and gives at once the relative value of the two money units. The conversion of the seventeen gold standard systems into terms of the twelve silver standard systems, and *vice versa*, is provided for by tables giving merely the comparative weights of the two units. Thus, for instance, the United States equivalent for the Mexican peso is given as 16.24+, since that is the ratio between the weight of pure gold in one, and the weight of pure silver in the other. The conversion into relative values is secured by dividing by the market ratio between gold and silver.

A series of constants is also given by which the ratio between gold and silver can conveniently be obtained from the bullion quotation in any market, the only operation required being a single division. With tables such as these, giving exact equivalents for monetary units, and giving constants for determining market ratios, use should be made of the slide rule, an instrument too little used outside engineering circles, and to which the author makes no reference. With the constant given, a single setting of the rule furnishes a table for all values instantly readable and accurate up to the third or fifth figure.

The simplicity of the author's tables has much to recommend them to those who are not themselves professional exchangers. For the countinghouse more cumbersome, but more mechanical tables, will doubtless still hold their own for the daily routine. Accountants, at least in this country, dislike the process of long division, and as between specific tables and the use of logarithms, the preference would

be for the former. The author's method is, however, unexcelled for occasional use, and to some would seem to possess an additional virtue in that it serves to enforce the theory that the value of coin depends solely on the weight of the metal—a merit, says the author and some of his critics, in that it implies that any bimetallic system is self-contradictory.

Such is, in brief, the substance of that part of the book which is most essential to its character as a practical guide. As to the degree of success attained, criticism seems to be forefended, for an insert in front of the title-page bears the certificate of David A. Wells that this book is the best of its kind "which has ever been, or is likely to be, written;" while the last page of the book proclaims the judgment of a late chief justice that, in view of "the conscientious exactness of working out the details," those who cannot learn from this book are "simply unteachable."

In face of such declarations criticism naturally hesitates, especially since the critic assumes the ungrateful rôle of picking out small flaws, apparently placing more importance on inerrancy of pen and type than on the "weightier matters of the law." But if the book is to be exempt from certain forms of criticism because of its purpose and scope, these very conditions make certain demands on the author which cannot be overlooked. It is designed to instruct the unlearned in the plainest possible manner, therefore it must be clear in expression and arrangement and orderly in form. But it might be perplexing to the "child" to find one unit of weight used in the text accompanying the table on page 7 and a different unit used in the table itself, a change which leads to real confusion on page 9.

More objectionable is the table on page 26, which gives a column of constants (for use in obtaining the ratio between the precious metals), but fails to indicate, or even to hint at, the expression to which the constant is to be applied, to ascertain which search must be made in another part of the book. Again, the table on page 144, with no indication of the value of the decimals, might well trouble others than "children and sailors."

More important even than simplicity and clearness is the question of accuracy. A set of tables is valuable only as it is trustworthy, and the customary leniency which must be shown to corrupt texts cannot find place where mathematical expressions are involved. Many errors appear in this book. It is true that most of them are not in the tables

themselves, but in the descriptive and explanatory matter. Probably the more important conversion tables (which were checked over by Mr. F. West), are free from error, but one's faith is somewhat shaken by finding small inaccuracies in other places. Thus, on pages 11 and 12, in three successive examples, the results given are incorrect, glaringly so in the last two cases, quotations for silver of ₧ 21 8a. 1p. and ₧ 26 11a. 5p., both being made to indicate the same ratio between gold and silver; and the expression 21.5052083 ÷ 1.090909 being made to equal 24.492.

The use of constants is, as stated above, one of the merits of the book. But exactness in their construction is essential, and it is surely in place to require it of an author who expresses weights to the tenth decimal of a grain. In Table V (page 46), instead of 952.995, the constant to be used with London quotations, the author gives the expression for the mint value of the standard ounce, namely, 934.5d. Four different expressions are given[1] for the constant to be applied to Shanghai quotations. These show variations of 1.7 per cent., by no means an insignificant difference in a table which professes regard for the seventh decimal. In the table on page 191 the expression 1.1206026 is given instead of 1.1296026, which cannot be charged to the typesetter, since the error is continued through nine multiplications. Other errors are found in the constant for Persian quotations given as 2.255 instead of 1.1111,[2] and for Javanese given as 10.417, and also as 42.328.[3] Upon the proof reader the blame may, perhaps, be laid for making the values on page 94 all read as grains of gold, while those from xv to xxix, inclusive, should be "grains of silver." More difficult to explain are the slight, but utterly unnecessary, errors in regard to the weight of pure metal in the United States half-eagle and silver dollar. With the gross weight correctly given, and the statement that the coins are .900 fine, it is strange to find the pure metal given as 116.09985 grains and 371.2514 grains, respectively. It almost seems as if the passion of the author for extreme decimals led him to add them so as to create the idea of "conscientious exactness in working out details," even when the additional digits are erroneous. In this case the difficulty, perhaps, arose from a conversion into decigrams and a reconversion into grains.

These errors are, many of them, unimportant. The author intimates that the tables following page 193 are more accurate than those

[1] Pp. 27, 47, 166, 191. [2] P. 27. [3] Pp. 47 and 191.

preceding it. Probably such is the case. All the errors which have struck the reviewer's eye are in these earlier pages. But a careful revision of the text would serve to remove suspicions which now mar the usefulness of the book.

Some of the simpler and more important tables contained in *The Universal Cambist* have been republished in pamphlet form under the title: *The World's Exchanges in 1898*. Some new matter is included, the most important being an explanation of the chain-rule method of working problems in the exchanges. The pamphlet is, however, too limited in its scope to be of general interest, and not sufficiently explicit to justify the author's expectation, that it may be used in secondary schools.

HENRY RAND HATFIELD.

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The Standard of Living in its relation to Economic Theory and Land Nationalization. By FREDERIC W. SANDERS. Chicago: University of Chicago Press, 1898. 8vo, pp. iv + 64.

DR. SANDERS has summed up with surprising clarity and exhaustiveness the bearings of economic theory upon the question of land nationalization, at the same time presenting an attractive and suggestive plea for this phase of social reform.

The author reasons that, in a competitive system of production and distribution, interest is a necessary and a justifiable phenomenon. The rate or the quantum of the capitalist's share, or the methods of its determination, may raise serious theoretical and practical problems; but the emergence of the interest share is the necessary correlative of the fact that stored-up labor, in combination with present labor and with land, makes possible a gain in product. That which the capital-owner gets back in excess of his investment is his pure interest—the difference between wealth as capital and wealth as *mere* wealth, between wealth in combination and wealth in isolation.

Wage-earners need, then, look for no important amelioration of their lot through efforts directed specifically and immediately to the reduction of interest. Interpreting wages as broadly inclusive of profits, our author argues that interest, rent and wages, considered as distributive shares of the social product, are apportioned through the market processes of value adjustment,—not, however, as the correlative

of the isolated productive power of the different productive agents, but as a question of the power of each agent in combination with the other agents. The productive power of each is generally greatly increased by the mere fact of combination. How shall this aggregate increase be distributed? What each agent produces is incapable of determination — otherwise than as the excess over what would have been produced in its absence; apportionment of each share in turn by this test would, however, call for a total of shares far in excess of the total product. Thus, while the actual distribution *may* not fall wide of the requirements of justice, or, at all events, might not do so under ideal conditions, the causes lie in the nature of value and in the processes of its market adjustment; moral considerations are, causally speaking, irrelevant; the productiveness test is practically inaccurate and inapplicable; value adjustments are impersonal and un-moral.

Assuming the existence of the competitive system, it follows that the processes by which market values are determined are fixed facts; social amelioration must find its sphere of action behind the given value field, in the attempt to modify the conditions which lie back of the value problem — and furnish the terms of it.

Considerations such as these lead our author to an analysis of rent, wages, and interest, separately, and to the conclusion that rent and wages are, in an important measure, susceptible of purposed modification, since, unlike interest, each of these distributive shares is affected by independent causal elements over and above the relation of its producing factor to the other productive factors; rent as a distributive share is dependent upon a more or less arbitrary human institution — private property in land; wages go back to the standard of living as their ultimate determinant.

As to the wages share: the determining fact being the standard of living, any readjustment which shall bring about an elevation of this standard will as a necessary result work an increase of wages. In short, an absolute rise in wages — that is, a rise not merely dependent upon some possible temporary fall in interest or upon some fall in the value of land due to temporary or local causes — must take place, if it occur at all, in connection with some effect worked upon the standard of living. It follows that wages are within the reach of social readjustment through the medium of some effect to be worked upon rent, in the way of its more equitable distribution.

The nationalization of land is therefore urged by our author not

merely as a direct amelioration of the existing distribution, but also as an important causal force for the further modification of the distributive outcome.

Fully to discuss the author's ingenious and suggestive argument would require space beyond the present limits. It may, however, be questioned whether Dr. Sanders has not put forth an altogether insufficient and inadequate argument in support of his position that the standard of living is in any important sense a determinant of wages. No doubt cause and effect are difficult of separation here, but Dr. Sanders seems to have distributed his emphasis badly. In the main it is probable that men get into the habit of consuming much through having much to consume, rather than directly through wanting much; that the standard of living is the result of wages, and is cause only in the degree that better conditions of living react to increase productive efficiency. All this, however, says nothing as to the truth of Dr. Sanders' thesis that the better distribution of rent would react upon wages to raise them, but only as to the degree and manner of the effect in this direction.

Something also is to be said as to the author's theory of interest and of his terminology. Regarding rent, interest and wages as distributive shares of the product, it is not unreasonable to require that the shares exhaust the product. This they fail to do unless interest be interpreted to mean the part received by the capital-owner — not merely as charge for use but as fund for replacement. This total return our author thinks it well to term interest, that is, *gross* interest (interest in the sense of share or claim), while the increment feature — the productiveness share — is termed *net*, or *true* interest.

There is evidently much to recommend this choice of terms; it is not so clear, however, that what the author calls net interest is in all cases, and necessarily, the difference between the value of wealth as mere wealth and its value when combined with the other productive factors. This is in substance the productivity theory; but cases of interest paid on consumption loans are not well covered by it. The reply may of course be made that interest of this latter sort is not an outcome of the primary distributive process, but is in stead a secondary fact — a redistribution. Still it is interest of one sort or another. But however much one may quarrel with Dr. Sanders' conclusions, his work will remain none the less attractive in its luminous statement, scholarly grace of style, and apt illustration — and none the less valuable

in the thorough modernity of the point of view, its severely acute analysis, its suggestive and judicial quality and its wide sweep of learning.

H. J. DAVENPORT.

Irrigation in Utah. By CHARLES HILLMAN BROUGH (Extra Volume XIX of *Johns Hopkins University Studies*). Baltimore: The Johns Hopkins Press, 1898. 8vo. pp. xv + 212.

FOR some years the transcendent importance of the subject of irrigation has been recognized by the dwellers in the Arid Region, but it is only in recent years that the magnitude of this subject has begun to dawn upon those who live outside of the arid belt. In dealing with irrigation in Utah, Mr. Brough has rendered available much material which will aid in a better understanding of the problem, and has contributed something to the general discussion.

The work is not merely a study of the problems involved in irrigation, but deals also with the economic development of Utah. The author, indeed, seems to think that the two are identical, and it may be true that they are so interdependent that one cannot be adequately treated without discussing the other. In an industrial organization like that of the Mormons all sides of the development are doubtless more closely related than in communities less highly organized or less strictly controlled. The church organization contributed much to the success of the early co-operative undertakings, but the development does not appear to have been very different in Utah from what it was in other parts of the Arid Region. In the early stages the small streams are diverted and utilized by individuals or groups who wish to cultivate the lands. Later the capitalistic enterprises come and reclaim land in great quantities for others to cultivate. The Mormon leaders were responsible for many people being in Utah much earlier than the economic forces at work within our territory would have driven them there, but that irrigation and the reclamation of land was more effectively accomplished by the Mormons because of their stricter organization, or that co-operation was more effective with them than it would have been with any other equal number of pioneers, does not appear.

After treating the progress made in early years under Mormon leadership, the author deals with the legislation on the question, and discusses the relative merits of the methods proposed for reclaiming the arid lands. In his opinion, the small, co-operative enterprises

have utilized most of the opportunities open to them. The capitalistic enterprises which have accomplished much have in many instances aroused the antagonism of the settlers and are open to grave objections, and better methods for their regulation and control must be devised. The present land and irrigation laws must be revised or replaced with something adapted to present and future needs. The general principle is laid down that land and water must both be under the same control. Local control is better fitted than national to secure the desired results, but the conflict of state interests in the same stream or the same source of supply calls for careful adjustment. The plan which secures the author's approval and which he ably supports is termed, "State Cession in Trust." "This plan proposes that Congress should cede to each state of the Arid Region, or to each territory in becoming a state, all the non-mineral lands within its borders now held by the general government, such state or territory to be charged with the reclamation of these lands and with their disposal to actual settlers."

WILLIAM HILL.